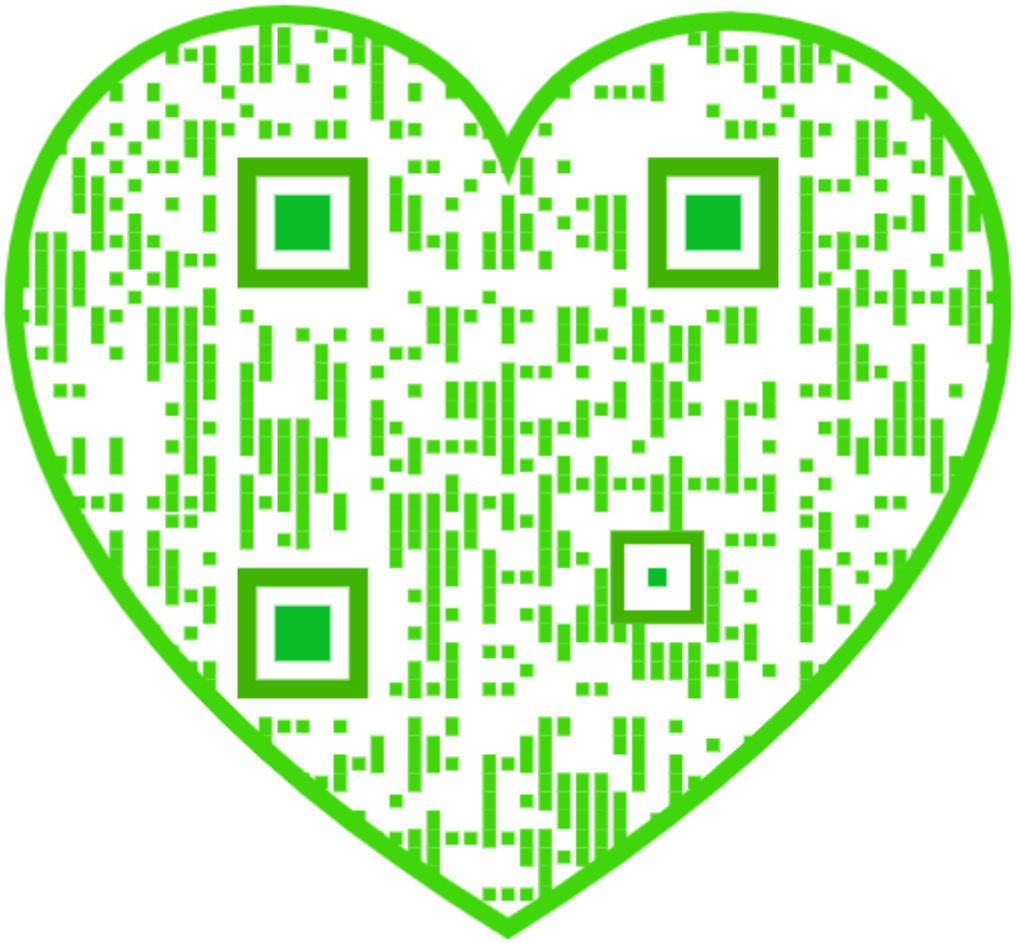

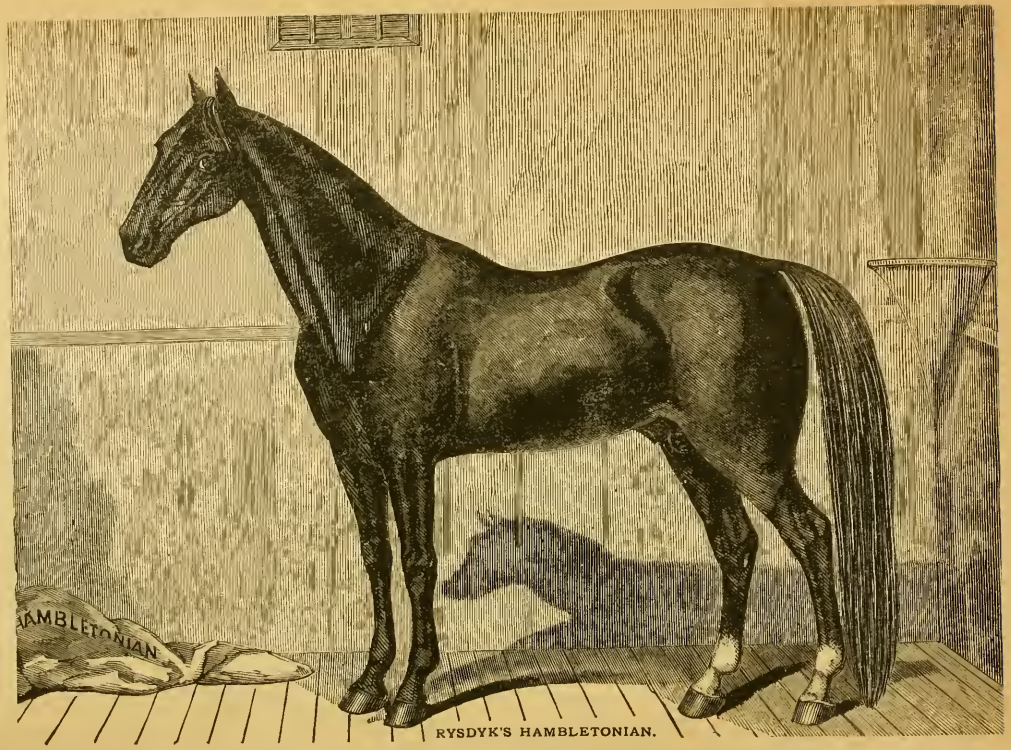

RYSDYK'S HAMBLETONIAN.

ILLUSTRATED

AMERICAN HORSE BOOK

CONTAINING

A PLAIN, PRACTICAL AND IMPROVED MODERN TREATMENT, PROFUSELY ILLUSTRATED WITH EXPLANATORY ENGRAVINGS, OF THE VARIOUS

DISEASES OF THE HORSE,

ALSO

A HISTORY OF THE BREEDS OF HORSES, AND THE ORIGIN, DEVELOPMENT AND REMARKABLE PERFORMANCES OF THE

TROTTING HORSES OF AMERICA,

WITH PORTRAITS OF NOTED TROTTING HORSES,

TOGETHER WITH INSTRUCTIONS FOR BREAKING, AND SYSTEMATIC TRAINING OF THE YOUNG AS WELL AS THE MATURE TROTTER; THE USE OF TOE WEIGHTS, BITS AND MANY APPLIANCES FOR MAKING SLOW HORSES FAST, AND FAST HORSES FASTER; THE BREAKING OF VICIOUS HORSES; SHOEING TO CORRECT EVILS; AND A LARGE AMOUNT OF VALUABLE MISCELLANEOUS INFORMATION FOR HORSEMEN, NEVER BEFORE PUBLISHED.

BY AN ASSOCIATED CORPS OF EXPERIENCED WRITERS.

LATELY REVISED, ENLARGED AND IMPROVED.

LIVE-STOCK PUBLISHING COMPANY,
J. MONROE SMITH, MANAGER.
CHICAGO, ILL.,
1885.

17909

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PREFACE.

The combining the talent of several Veterinary practitioners in different parts of the United States, noted for their success in treating diseases of domestic animals, as well as the practical experience of scientific stock-breeders, has not heretofore been done in books on this subject. But few of the books published were practical, too many were necessary to obtain a small amount of information, and the heavy expense prevented the people purchasing. Several gentlemen, largely interested in breeding, and developing the interest in breeding fine stock in this country, feeling the necessity for a comprehensive work of this kind, which should be reasonable in price, organized a Publishing Company for this purpose.

Directions were given to the Manager to secure the very best Veterinary talent in this country; to so illustrate the work by explanatory engravings as to be readily understood; to have the causes, symptoms, prescriptions and treatment given in concise and plain English, that it might become the Farmer's complete Adviser; that instructions be given, so that the Breeder might be able to develop his fine stock and realize its value.

How well all these expectations have been realized, will be seen by the following pages, which combine all these features, in a convenient shape for ready reference in cases of emergency, from men of practical experience, excelling anything of this kind ever before published, and to be found in no other work. Theory has been sacrificed where it clashed with actual tested experience, and preference has been given to those remedies which are common, often on hand, or easy to procure.

By purchasing, when necessary, the different articles outright, NO ROYALTY IS PAID ANY AUTHOR, which very largely reduces the price, and makes the book the cheapest of its kind. It combines six books in one, for the price of one, and is a substitute for many.

PROFESSOR GOING, of the "SPIRIT OF THE TIMES;" PROFESSOR LAW, of Cornell University, New York; PROFESSOR COLEMAN, and many others of recognized celebrity, have placed us under obligations, by the use of either their articles, or by reference to

their contributions on these subjects, in addition to our regular writers. We must not omit thanking many veteran and practical Breeders who have materially assisted the enterprise by articles, information, and advice of known worth. Several Trainers of wide experience, have aided in preparing the instructions for developing the Trotting Horse. It would be impossible to enumerate all who have aided in its preparation, or to whom we would like to return thanks.

We confidently invite the inspection of the Stock-raisers of this country to the within work, as meeting a want long felt for a book of reference which would tell them just what they want to know, in the shortest possible time, devoid of vague theories and bewildering technicalities, and at the same time be reliable.

To protect the people, as well as to protect our reputation, this book will not be sold by irresponsible, wandering agents, but by men dealing direct with the Company, who come to us highly recommended, and who will be furnished with proper credentials for representing the Company. We ask the courteous treatment of these representatives who are introducing the work, for they are men of character. It will not be for sale at book-stores, for the simple reason that the limited sale, as well as the added profits of each retail dealer, would increase the price to the people. It can only be obtained of the canvasser, in his assigned field, and will not be sent by mail or express from the office. No books will be sold during delivery, the requisite number for each township, as reported, being shipped, and no more.

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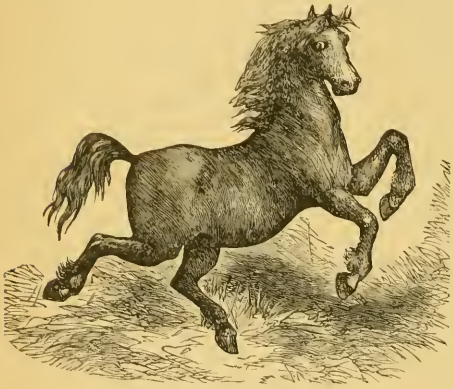
SLEEPY STAGGERS—BLIND STAGGERS—MAD STAGGERS.

THE DIFFERENT STAGES OF THE DISEASE.

All these names are really but different stages in the same disease. In the first stage the brain is only oppressed, while in the last stage, it is very highly inflamed, causing the horse really to become mad. Our illustration plainly shows the frantic actions of a horse in this stage of the disease.

WHAT CAUSES IT GENERALLY.



MAD STAGE OF STAGGERS.

Animals that have broken loose at night, and engorged themselves at the oat-bin, become subject to staggers; the disease of course originating in the stomach, and the brain, through reflex action or sympathy, participating. Indigestion, no doubt, occasions it in many cases, hence by proper precaution, it may be either averted or prevented. This is proven from the fact that animals exhibiting unmistakable symptoms of staggers, have frequently been cured by regulating their diet, administering tonics, and giving an occasional dose of physic. In some portions of the south it seems to prevail in localities, and is caused by local influences and food.

HOW THE HORSE ACTS.

In the first stage the horse hangs his head, which he presses against the wall, with his eyes closed. The pulse throbs, the breathing is labored, and the horse sometimes snores. The skin is cold and clammy, the ears and tail motionless, with the nasal membrane

leaden color. In the next stage, which next follows, the eyes brighten, the nasal membrane reddens, the skin is hot, and all the movements become quick and jerky, the breath is panting, rapid and sharp, and the mad stage is reached, which is most terrible to witness.

WHAT TO DO FOR OVERGORGING.

If the attack has been caused from overgorging of grain, the horse must be kept from drinking a particle of water. Give at once a quart of any kind of oil except kerosene. Fresh melted grease of any kind will do, but not salted grease. If no benefits are to be seen in four hours, repeat the dose. If no change takes place in another four hours, or if the case is a bad one, and has been neglected or not discovered until sometime after, give the following at one dose:—

Any kind of Oil, one quart;
Croton Oil, ten drops.—Mix.

If no benefit is seen from the above dose in six hours, repeat it, adding twenty drops of Croton oil instead of ten. If this does not move the bowels inside of six hours, repeat it, adding thirty drops of Croton oil instead of twenty. If this does not move the bowels inside of six hours, commence back and go over the whole round of medicine in the time stated, again; but this will seldom be necessary. Stop all medicine as soon as the purgative takes effect.

WHAT THIS TREATMENT DOES.

The oil is the best possible physic which can be used in this disease, as it does not swell the grain as aloes given in a drench would, while at the same time it soothes the congested and inflamed coats of the stomach. Everything depends on getting the bowels into action. After the acute symptoms have subsided, apply either a a strong stimulating liniment to the back, loins, and poll, or apply to the poll and loins a liquid fly-blister. But you should, on no account, stimulate or blister while the animal is frenzied, as you would probably, by thus adding to the excitement, throw the patient into convulsions, which might terminate fatally. Iodide of potassium may be given in drachm doses, once a day, for three or four weeks, in

order to stimulate the absorbents to renewed energy and activity. If the bowels have not regained their normal tone and activity, give thirty grains of nux vomica, twice a day, for three weeks. Should the pulse be weak, give a stimulant, but of a weak character. After the fit has been subdued, and the animal has entirely recovered, a repetition of the attack may be prevented by adopting precautionary measures. Slow work only should be given, and great care taken to see the animal is not permitted to become costive, and so remain for any length of time. Of course attention must be paid to the food after recovery, which should be meal gruel at first, gradually working up to solid food.

MEGRIMS—EPILEPSY.

WHAT THIS DISEASE IS.

It somewhat resembles an epileptic fit in man, and varies in causes as well as in character of attack. The brain and nervous system seem to be involved.

HOW THE HORSE SHOWS IT.

Sometimes, in a violent attack, the horse will strive to run into doorways, off embankments, or into fences. Occasionally the animal falls and lies until the fit is over. It may be so slight as merely to cause notice to be taken that the horse at times acts strangely. Any actions of the latter kind should be viewed with suspicion.

WHAT CAN BE DONE FOR IT.

Nothing except care and regularity of feeding and prudent driving. The following dose will lessen the number of the attacks as well as severity:—

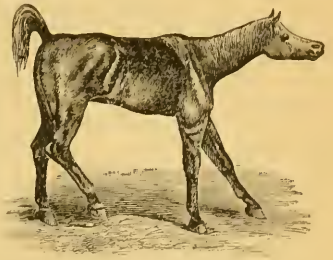
Bromide of Potassium, one drachm;
Bromide of Ammonium, one drachm;
Tincture Ginger, half fluid ounce;
Water, half a pint.—Mix.

Give twice a day until symptoms cease to show severity, then reduce to once per day. The treatment is only palliative, and the horse cannot be relied on.

TETANUS, OR LOCK-JAW.

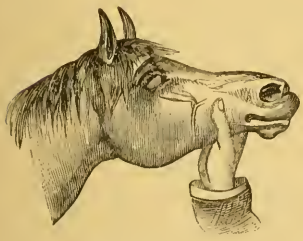
CHARACTER OF THE DISEASE.

This is a rigid spasm of the entire muscular system. It is said to be of two kinds, but really is merely of two origins: first, from a wound; second, from some unknown cause; probably nervous irritation, from over exertion, hardship, exposure or injudicious feeding. It may display itself immediately after an injury or wound, but generally occurs from the sixth to the sixteenth day. Our illustration shows just how far a horse with this disease is capable of locomotion.



POSITION OF HORSE IN LOCK-JAW.

TO TEST SUSPECTED LOCK-JAW.



TEST FOR LOCK-JAW.

If uncertainty exists in regard to this, it may be determined by a very reliable test, that of raising the head of the horse, when, if undeveloped tetanus is present, the haw or membrane that crosses the lower corner of the eye, will extend and often nearly cover the eye-ball, as is shown by our illustration.

SYMPTOMS, WHEN FROM A WOUND.

The horse is generally nervous and fidgets in his stall, and is excited by the approach of anyone. In rare instances the wound will close and become morbidly dry, or only discharging a foul and discolored fluid. It stands day after day in the same spot, and while hunger exists the jaws are immovable and it cannot eat. The body presents a hard, woody appearance, from the rigidity of the muscles. Every muscle and nerve seems strained to its utmost tension, and the horse even seems lower in stature.

HOW TO TREAT THIS DISEASE.

All kinds of treatment, more or less barbarous, have been tried with poor success. The great object to accomplish is to relax the nervous tension, which is quickest done by opening the bowels. Have the shoes removed and the horse placed on sawdust or dry dirt floor. The horse must be kept quiet and tranquil. The following must be given at one dose:—

Aloes, four drachms,
Extract Gentian, four drachms,
Croton Oil, twenty drops.—Mix.

This is a heavy dose, but nothing less will affect the horse. If it does not operate in six hours, repeat the dose.

HOW TO FEED THE HORSE IF JAWS ARE FIXED.

HOW TO FEED IN LOCK-JAW.

If the case is chronic or lingers, and the horse suffers for food, it must be fed as shown by the engraving. This can be accomplished by inserting a flexible rubber tube into its nostril, after the head is slightly raised, which can be passed down two feet into the passage which leads to the stomach. A stomach pump should be used, and a gallon of thin meal gruel injected four or five times per day. Be gentle in inserting the tube.

WHAT NOT TO DO.

Don't blister, seton or fire. The nervous system of the horse is already too highly sensitive and morbidly irritable. Counter irritants are beneficial at proper times, but are worse than useless here. Do not allow any visitors to satisfy their curiosity by looking at him. Every movement around the sick animal aggravates his disease, intensifies his suffering, and prolongs his malady; therefore, let him be as quiet as possible.

PARTIAL PARALYSIS.

WHAT ITS EFFECTS ARE.

It generally affects one or both hind legs, and while never more than partial, yet one foot is continually getting in the way of the other, making the gait unsteady.

FAST HORSES ARE MOST LIABLE

to it from the severe nervous tension they are subject to during long heats of the racing season. This exhausts their vitality, and partial paralysis is but a sign of decaying energies, already too heavily drawn upon. A horse afflicted with this disease has seen its best days and is now on the decline.

ITS PERMANENT CURABILITY.

It admits of some relief, and the horse can be patched up so as to make a fair show of speed, if not too long continued. Any severe driving or overheating will cause it to re-appear, and care must be taken not to err in this direction.

WHAT TO DO FOR IT.

No exercise must be given faster than a walk, and no excitement must be allowed around or near the horse. Feed well and spare no labor in grooming, and every care should be taken to bring the horse up to the highest bodily condition. The hind quarters should be smartly brushed with a coarse brush several times daily. Place a wet flannel cloth over the small of the back and cover it with a piece of oil cloth, and over this put a rug. Keep the cloth wet constantly. Give mashes and green food to regulate the bowels, which must be kept active. If physic is necessary, use a pint of oil in preference to aloes. Give, night and morning, the following ball: —

Strychnine, half a grain;
Iodide of Iron, one grain;
Quassia Powder, and Molasses enough to make pill mass.

After the first two weeks, increase the quantity of strychnine in the above ball to one grain, and at the end of five weeks, increase it to one grain and a half. This will cure to all appearances.

COMPLETE PARALYSIS—SPINAL MENINGITIS.

WHAT THIS DISEASE IS.

This may occur from injuries to the spinal cord, by blows over the back along the back bone. Complete loss of power over the hind legs, as well as loss of feeling exists. These cases are generally hopeless. Again, it may occur in localities, and certain sections of the country are occasionally visited by it from no apparent cause. Though the disease is considered not to be contagious, still we find, as a rule, that when an animal suffers from it, others in the same or adjacent buildings soon become affected. This we account for by attributing the presence of the disease to be chargeable to atmospheric influence. The horses are sometimes taken very suddenly with stiffness in the hind parts, and in a few hours will be off their feet, and sometimes they will show stiffness two or three days before they come down. They generally die in from three to four days. They seem to want to eat and drink at times, and occasionally seem to be in great pain, with tenderness across the back and loins, with great heat in that region. They seem to have a nervous twitching of the cords and muscles along the whole length of the back. The pulse is generally very low, from thirty to forty-five to the minute, and not much feebler at first.

It is the opinion of the most scientific writers that the poison becomes absorbed, and inoculates the entire system with its poisonous principles, and, as a result, death may ensue from collapse, or from debility consequent upon inability to assimilate the food, the nervous system sympathizing. When bled, the fluid presents an unnaturally thick, fœtid, dark, and unhealthy appearance. The urine is very offensive, and resembles, in consistency and color, slightly diluted molasses. In most severe cases the paralysis extends to the bladder and uretha, hence the retention of water, and consequent uremic poisoning.

HOW TO TREAT IT.

Apply blankets, wrung out of warm water, for three consecutive hours a day for the first two or three days. As soon as attacked, if

possible, put him in slings; under any circumstances, slings should be called into requisition at once. Now administer a *good* cathartic. The adjective should not be overlooked, as there is an immense quantity of aloes in the market which is worse than useless, for when it does not purge at once, it invariably sickens, and acts as a severe diuretic, which is extremely injurious under the circumstances. Immediately after giving a purgative, (or, if preferable, before), evacuate the bladder by means of a catheter. While the organ remains torpid, evacuate it twice a day. Apply a severe mustard plaster, wet with vinegar, over the region of the loins and kidneys. Apply to the legs, quarters, and haunches, a little of the following liniment, twice a day, with the hand: —

Liquor Ammonia, four ounces;
Spirits Turpentine, four ounces;
Olive Oil, four ounces.—Mix. Shake before using.

Also give a powder, morning and evening, as follows: —

Extract Belladonna, one scruple;
Extract Nux Vomica, one scruple;
Powdered Ergot, one scruple.—Mix.

This is best given in a mash. But sometimes mashes will not be taken: we must then give it as a drench. Mashes and vegetables should compose the diet until convalescence commences, when tonics are in order. The extremities should always be kept warm by friction and bandages.

AMAUROSIS—PARALYSIS OF OPTIC NERVE.

ITS DECEPTIVE CHARACTER.

This disease is a paralysis of the optic nerve and may primarily affect one eye, but generally terminates in total blindness of both. It leaves a fixed dilation of the pupil, but otherwise changes very little the general appearance of the eye, and to the uninformed person, is very deceptive. Many horses have been palmed off upon unsuspecting buyers which were totally blind.

ITS MAIN CAUSES ARE

anything which affects the optic nerve by location of injuries in that part, or any course of treatment which undermines the constitution of the horse, or exhausts its nervous vitality. It is incurable.

HOW MUCH IT CHANGES THE EYE.

The pupil is often beautifully dilated, but on close inspection, will be found not so dark as in a healthy eye, with a slight milky cast, accompanied by a bright tinsel-like green, shining from the interior.

A CERTAIN TEST FOR DETECTING IT.

Place the horse in a dark stable, and twenty minutes after quickly lead him out into bright sunlight. If very slight or no contraction of the pupil takes place, the horse is certainly blind. One eye may contract and the other not, if only one eye is affected. If necessary, the same test can be applied at night by using a bright light, placing it quite close to the eye; it will require a longer time to act, however.

UNRELIABLE AND FALLACIOUS TESTS.

Some people suppose that the above tests can be applied by using the hand to cover up the eye, or a hat, etc., in order to darken the eye. These are unreliable, for they do not completely hide the rays of light; neither are feigned blows at the eye any test, for by the loss of sight, the other nervous sensations are rendered more acute, and the wind of the blow causes the horse to wink or shrink.

CHAPTER II.

DISEASES AND INJURIES OF THE EYE.

CONTENTS OF CHAPTER.

SPECIFIC OPHTHALMIA — CHRONIC INFLAMMATION OF THE EYES — MOON BLINDNESS.— Mistaken notions about this disease — What it really is — How to tell if a horse is subject to it — How it terminates — Its first symptoms — Its treatment — What to do if a horse is feverish — If in pain — What to avoid doing — Hooks in the eyes — Inhuman acts of ignoramuses and quacks — No penalty too severe for them.

SIMPLE OPHTHALMIA — COMMON INFLAMMATION OF THE EYES.— Its character, symptoms and cause — Its easy and certain treatment if commenced in time.

CATARACTS OR SPOTS IN THE EYE.— The different kinds and their size — Their effects — How to examine for them and to distinguish them — Peculiarities of the different kinds — Warnings about buying horses with affected eyes — Save money by examining intelligently — Cataracts which are curable — Those which are incurable.

SPECIFIC OPHTHALMIA — CHRONIC INFLAMMATION OF THE EYES — MOON BLINDNESS.

MOON BLINDNESS.

This is evidently a constitutional affection. Some people believe, from its periodic character of coming and going, that the moon influences it, and hence give it the name of "moon blindness." This is a mistake.

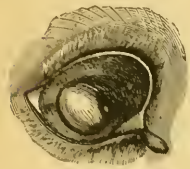
WHAT THE DISEASE REALLY IS.

It is certainly a constitutional disorder as well as a local affection, and in this particular differs from simple ophthalmia. The eye may suddenly clear and apparently get well, when the opposite organ will be attacked. It will thus dodge about, and has been known to leave the eyes and attack the lungs after exposure.

SIGNS THAT A HORSE HAS HAD IT.

Even if a horse has had its first attack and is apparently sound, it leaves its traces behind. The margin of the transparent part of the eye, next the white, is the last place it quits, and always leaves behind an irregular line of cloudiness, different from the evenly clouded shade of the natural eye. A more serious attack causes the transparent part of the eye to become cloudy, and losing its liquid appearance, becomes turbid, and finally white. In fact, any unnatural cloudiness of the eye may be looked upon with suspicion.

ITS LENGTH AND TERMINATION.



HOW IT LEAVES THE EYE.

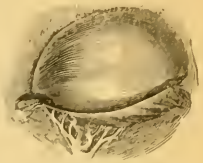
It is impossible to say just how long it will last. The attack has left in a week, and has lasted two months. It never reaches the height of its severity in its first attack. It occurs again and again, and ends in the destruction of one or both eyes. It leaves the eye distorted, and its structure altered, as illustrated.

WHAT CAUSES IT.

There is no doubt but what foul and badly ventilated stables and impure air, aggravate a constitutional predisposition of the horse toward diseases of the eye. It has been known to frequent particular stables in cities, and attack one after another of its inmates. Overheating is another fertile source.

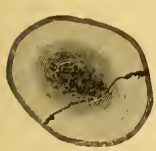
THE EARLIEST SYMPTOMS.

The lid swells and tears trickle down the cheeks, as shown by illustration, and nothing will be found in the eye. Some constitutional disturbance will be shown by a hard pulse, sharp breathing, with a staring coat and the feet cold. The mouth will be clammy, and the nasal membrane either reddened or leaden color. The white of the eye is the first portion inflamed, which afterward covers the whole eye. The pupil will be closely contracted, and the haw or membrane, which covers the lower corner of the eye, will nearly half cover it. This is shown plainly in the engraving. The dark line shows the extent of the haw over the eye.



FIRST SIGNS OF OPHTHALMIA.

HOW TO TREAT IT.



PUPIL AND HAW.

The horse should be removed to a dark, well ventilated barn or shed, and all light except from the north, be excluded. The vein which passes under the eye should be opened, and if the lid be much swollen, several punctures should be made in different places to withdraw blood. After the bleeding has ceased, cloths, wet in cold water, should be hung over both eyes, and be kept constantly wet. For constitutional treatment give the following ball twice each day: —

Powdered Colchicum, two drachms;
Iodide of Iron, one drachm;
Calomel, one scruple.—Mix.

Observe the teeth while giving the above, and if it affects them, leave out the calomel, or change to the following, equally as good: —

Solution of Arsenic, three ounces;
Muriated Tincture of Iron, five ounces.—Mix.

Give a tablespoonful in half a pint of water, twice a day, until benefit is seen.

WHAT TO DO IF FEVERISH.

If the pulse rises to seventy, and becomes thin and wiry, give the following dose every hour until it is more natural: —

Tincture of Aconite, ten drops;
Water, four tablespoonsful.—Mix.

Should the pain be very severe, give the following: —

Extract Belladonna, two scruples;
Rubbed up in four tablespoonsful of water.

Do only one thing at a time. Use the aconite to reduce the pulse, and if this does not allay the pain, give the belladonna and stop the aconite.

INSTRUCTIONS ABOUT WHAT NOT TO DO.

Do not bleed, except locally, near the eye. Keep the bowels open by the use of mashes instead of physic. Try and get the horse, by care, into the highest bodily condition. Above all, do not allow any severe caustic applications to the eye or allow anything blown into it. Cold water is the best of all applications, to which laudanum may be added — an ounce to a pint of water. Don't overheat the horse, and be careful of him in summer.

HOOKS IN THE EYES.

Some uninformed people who have had horses afflicted with inflammation of the eyes, or periodic ophthalmia, noticing the projection of the haw over the ball of the eye, have imagined they are troubled with "hooks in the eyes," and we are sorry to say that even in this age of enlightenment, and ease of obtaining scientific knowledge by reading, ignorant pretenders have officiously cut and gouged the protecting haw out, under the belief that this symptom was a disease. There is no such disease and it should be a penitentiary offense to thus mutilate the horse.

COMMON INFLAMMATIONS OF THE EYES

ITS CHARACTER AND CAUSES.

This is called simple ophthalmia, and differs from specific ophthalmia in being merely local. A blow in the eye by the end of a whip, a bit of hay-seed or dirt lodged under the lid, or anything which irritates the fine delicate membrane which covers the eye-ball, will produce it.

ITS EASY TREATMENT,

which is very simple, is to hang a cloth over the eyes, which must be kept constantly dripping wet with the following lotion: —

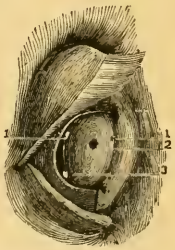
Tincture of Arnica, one fluid ounce;
Laudanum, half a fluid ounce;
Water, two quarts.—Mix.

As soon as the swelling has gone down, examine the eye and remove anything which may be in it. In extreme cases, it may be necessary to open the vein which runs under the eye, and take away a small amount of blood. It is easily cured, if these directions are followed during its commencement.

CATARACTS OF THE EYE.

THE DIFFERENT KINDS OF CATARACTS.

A capsular cataract is situated on the capsule which contains the lens of the eye, as shown by Fig. 1 in the illustration. A milky cataract is a turbid condition of the fluid around the lens. A lenticular cataract is situated upon the lens of the eye, as shown at Fig. 2 in the engraving. A spurious cataract is a spot behind the capsule and more in the interior of the eye. This is the only kind which is curable. Fig. 3 will show its location in the eye.



KIND OF CATARACTS.

SIZE OF A CATARACT.

PARTIAL CATARACTS.

It may be a speck the size of the point of a needle, or it may entirely cover the pupil of the eye. Any white speck within the pupil of the eye, of whatever form or size, is a cataract of some kind. The two white specks in engraving are partial cataracts.

WHAT ITS EFFECTS ARE.

It is a dangerous affection in nervous and high spirited horses, as it gives them an imperfect vision. They are liable to sudden frights and make bad shyers.

HOW TO EXAMINE THE EYE.

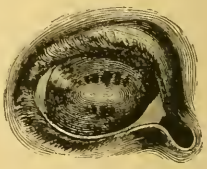
If the presence of a cataract is suspected, yet not seen, the best method of examination is to artificially dilate the pupil of the eye by using the following preparation: —

Extract Belladonna, two drachms;
Rub up with Water, two tablespoonfuls.

Apply this with friction to the outside of the lids, being careful not to get any into the eye. By this means the interior of the eye can be very critically examined, and any defect easily seen. The examination should be made in bright sunlight.

PECULIARITIES OF SPURIOUS CATARACTS.

If the spot presents a glistening metallic appearance, and changes as viewed from different points, looking larger or growing smaller, together with external signs of injury, it is a spurious cataract, which is always partial. It can be cured by same treatment as for inflamed eyes.



TOTAL CATARACT.

SIGNS OF LENTICULAR CATARACT.

The spot always presents the same shape and appearance, and always seems in the same location. Incurable.

APPEARANCE OF CAPSULAR CATARACT.

If the whiteness changes appearance, in some positions seeming thin and less in bulk, it is assuredly a capsular cataract.

WARNINGS ABOUT BUYING HORSES.

Never buy a horse without a close inspection of his eyes. Thousands of horses are sold every year which are defective in eyesight. The eyes of a horse are as important, nearly, as his legs, but how few know how to judge them. By the hints we have given, anyone can soon be able to judge correctly about the condition of the eyes of any horse.

CHAPTER III.

DISEASES AND INJURIES OF MOUTH AND NOSTRILS.

CONTENTS OF CHAPTER.

INJURIES TO THE MOUTH.—How caused by irritable drivers—What to do for them—Simple lotion and simple treatment.

INJURIES TO THE JAW.—More serious than to mouth—To tell if bone has been injured—How to lance to prevent abscess—How to remove the dead bone and how to heal the wound.

LAMPAS.—Mistaken opinions about this trouble—The old and barbarous practice—How this ruins and spoils a fine roadster—How simple the treatment if only known—How to lose money by following old treatment.

APHTHA—ERUPTION AROUND MOUTH AND ON TONGUE.—What the disease is—Its easy cure.

BAD TEETH—WOLF TEETH.—How uneven teeth injure a horse—Diseases caused by them—Foolish ideas about wolf teeth—Explanations about them.

COMMON COLD.—How it commences—What to do for it—How to steam a horse's nose—Difference between discharge in common cold and in glanders—Home remedies for it.

NASAL GLEET.—Its difference from cold—How it differs from glanders—Character of discharge from nose—What can be done for it—The treatment of obstinate cases—Best remedies and how to use them.

NASAL POLYPUS.—Peculiarities of this growth—How to remove it—Not dangerous.

INJURIES TO THE MOUTH.

HOW CAUSED.

Generally these are caused by sawing and jagging of the lines in the hands of an irritable and cruel driver. They are more or less serious according to circumstances.

WHAT CAN BE DONE FOR THEM.

Do not use harsh caustics or greasy ointments, but prepare the following lotion, which will prevent offensive discharges, and granulation: —

Chloride of Zinc, two scruples;
Laudanum, half an ounce;
Water, two pints.—Mix.

Bathe the injury with this lotion, using a soft sponge, after each feeding or watering. If more serious, and danger of parts sloughing off, use every three hours. All food should be soft, consisting of meal gruel, boiled roots, which should be mashed, scalded oats, etc.

INJURIES TO THE JAW.

MORE SERIOUS THAN TO THE MOUTH.

These are more serious and of a deeper character than ordinary injuries to the mouth, and include a bruise of the bone, which may exfoliate and come away.

WHAT MUST BE DONE.

If the bone of the jaw has been injured, the sharp point of a knife must be inserted into the spot until it touches the bone. Sound bone has no sensation, but diseased bone is acutely sensitive. If a discharge follows, with some odor, it must be washed and injected with following lotion three or four times daily: —

Chloride of Zinc, one scruple;
Laudanum, half a fluid ounce;
Water, one pint.—Mix.

If the opening is not large enough to allow the particles of bone to escape, it must be enlarged by the knife, and in some instances the forceps must be used to remove the dead bone. The lotion should be continued until healed.

LAMPAS.

A BARBAROUS PRACTICE.

This is a favorite disease with some stablemen, who are never so happy as when showing their skill in operating with a hot iron on the tender bars of the horse's mouth. If a young horse is "off his feed," a hot iron is their panacea.

WHAT THE DISEASE IS.

It affects young horses before they have their full complement of teeth. Young horses changed from pasture to dry, hard food in the stable, will be troubled with it. The bars of the roof of the mouth slightly inflame and the horse fails to eat his food.

ITS SIMPLE TREATMENT.

Now, knowing its cause, how easy to cure. Merely give soft food, consisting of bran mashes to keep the bowels open, soaked or scalded oats, boiled roots, etc., for a few days, and the trouble will disappear. We positively assert that no other remedies need be used. In case of loss of appetite take: —

Hydrochlorate of Ammonia, two ounces;
Sulphate of Soda, eight ounces;
Powdered Gentian, four ounces;
Powdered Linseed, two ounces;
Spring Water, as much as sufficient to make an electuary.

Of this give two tablespoonsfuls thrice a day, smearing upon the root of the tongue with a ladle.

DON'T BURN THE HORSE'S MOUTH.

It ruins the delicate sensitiveness to the touch of the reins so necessary in a pleasant, well-broke roadster. It often destroys the

palate and makes the horse a confirmed "wheezer." Of all practices descended from the dark ages, this is the worst. If humanity will not check you, remember you are taking money from your pocket in lessening the value of the horse.

APHTHA.

CHARACTER OF THE DISEASE.

Both lips swell, the horse is dull and refuses to feed, and the tongue is swollen and protruded. Around the mouth and on the tongue small lumps appear, which are hard at first, soon forming a vesicle containing a clear fluid, which finally bursts, crusts over and falls off. By this time the disease is over.

THE TREATMENT OF IT

consists in feeding thin meal gruel while the mouth is inflamed, and as soon as the pimples are about to burst, prepare the following:—

Borax, five ounces;
Molasses or Honey, two pints;
Boiling Water, one gallon.—Mix.

When cool, hold the head up and pour half a pint into the mouth, and in half a minute let the head drop and the fluid run out. Repeat this several times daily. No other medicine is necessary. Attention should be given to proper food.

BAD TEETH.

HOW THEY AFFECT A HORSE.

UNSUSPECTED CAUSE OF BAD CONDITION.

Sometimes a molar tooth projects up into a vacancy in the upper jaw, as shown by our illustration, caused by the loss of a tooth, and having nothing to keep it worn down, finally pierces the gum of the jaw. It makes it difficult for the horse to eat, and he will sometimes throw out a mouthful

after it has been partially masticated. It may so affect the face and jaw as to cause nasal gleet. In some cases the molars are worn off by uneven action, to a knife-like edge, and wound the sides of the mouth as well as the hand when introducing a ball. These troubles can be relieved by an operation performed with a tooth rasp. For any wounds, the chloride of zinc lotion for "injuries to the mouth," will be all that is necessary. Bad teeth are often an an unsuspected cause of indigestion and other troubles which puzzle the owner.

WOLF TEETH.

Many people imagine that "wolf teeth," as they are called, by some mysterious means, reach up to the eye and affect it in some manner, and many other ridiculous fancies. They are merely superfluous teeth. The idea that they are injurious has become so firmly engrafted on the public mind, that it is almost impossible to eradicate it. In the great majority of cases, horses affected suffer from recurrent ophthalmia, the teeth having nothing to do with the causation of same.

COMMON COLD.

DESCRIPTION OF THIS AILMENT.

It is caused by exposure and neglect, after which the horse is dull, the coat rough, the body of unequal temperature, in parts hot, and in others icy cold. Often tears trickle from the eyes, which may be slightly inflamed. At length a copious discharge flows from the nostrils.

WHAT TO DO IN THIS CASE.

Blanket the horse warmly, and if possible, steam the nose. The ordinary feed nose-bag is too short, but a substitute can be made from the ordinary two bushel bag, by attaching straps to its mouth to go over the head. Put a peck of bran and a handful of hops in

the bottom of the bag, and pour on it the following mixture, stirring the bran so as to incorporate it thoroughly: —

Spirits Turpentine, two tablespoonfuls;
Solution of Carbolic Acid, two tablespoonfuls.—Mix.

USE OF NOSE-BAG FOR COLD.

Put the nose of the horse in the mouth of the bag, and tie the strap over the head back of the ears. Now cut a perpendicular slit in the bag a foot from the bottom, and through this pour four or five quarts of boiling water, and repeat as steam goes down, for half an hour. Be careful and not scald the horse. If the nostrils are dry, repeat six times per day until discharge is established, and then reduce to three. This is a great aid in all diseases of the lungs or air passages. Regulate the bowels by bran mashes and green food, which will reduce the fever. Do not bleed or physic. Colds debilitate the system very rapidly, and we must build up and not reduce. This is the results of later knowledge and investigation. This disease may terminate in pneumonia, etc.

DIFFERENCE BETWEEN DISCHARGES IN GLANDERS AND COLD.

SWOLLEN GLAND IN COLD.

Some people have been needlessly alarmed by a discharge from the nostrils of a horse suffering with a cold, and by the presence of a swelling of a gland under the jaw, as shown by our illustration. The swelling is always present in glanders and may also be present in common cold, and proves nothing except the location of inflammation.

NASAL GLEET.

DESCRIPTION OF THE DISEASE.

Nasal gleet is a generic term for almost all kinds of discharges from the nose or nasal chambers. It is a catarrhal attack; it is consequent upon some derangement of the air passages of the head. It requires careful discrimination to differentiate between it and glanders; this disease, nasal gleet, may originate without any assignable cause; it generally supervenes upon a chronic attack of catarrh. Aged or old horses are far more liable to it than are young ones. The discharge is occasionally seen to issue from one nostril only, but, as a rule, both are infected. The discharge is not seen to issue from the left or right particularly, it may come from either, and it may come from both, whereas, in glanders, if the discharge comes from one nostril only, it is almost invariably from the left or nigh. An animal may have the submaxillary glands tumified or may not, whereas, in glanders, they are, we may say, always swollen and indurated. Another distinguishing feature is that, though the nasal membrane becomes inflamed and discolored, and may even assume the leaden color seen in glanders, still you do not find the pustules or ulcerative indications, which are usually the precursors of glanders.

SYMPTOMS OF NASAL GLEET.

THE CHARACTERISTICS OF THE DISCHARGE.

There is no uniformity as regards either the color or quantity of the discharge, as it varies in different animals, and in the same animal in different stages of the disease. The gleet which we more particularly come in contact with consists of a substance containing mucus rather than pus, and always of a white color; in fact, its color is a distinguishing feature by which to assist in forming a diagnosis, as it is remarkable for its clearness, amounting, if not to transparency, at least to opaqueness. It is of about the consistency of laudable pus or thick buttermilk; occasionally it is smooth and

uniform, again thick, full of knots or clots. Sometimes the whiteness changes to a yellow, or yellowish-white, and partakes of the nature, in some degree, of pus. At times it collects around the opening of the nostrils, and is ejected in flakes or masses, which are separated in regular succession, and at times there is considerable irregularity observed as to the manner in which it is discharged. Sometimes, after administering the usual medicines, the discharge may cease, but it breaks out again, the second attack being usually more virulent than its predecessor. There is occasionally a most disagreeable fetor accompanying the discharge; and again it is scentless. The animal does not in any way seem to suffer from the effects of the disease; the usual quantity of food is consumed, and his mettle and spirits are in perfect order, nor is his capability to to resist fatigue greatly affected, though this latter feature should not be tested.

HOW TO TREAT IT.

This may be at first simply conducted on the expectant plan. Giving merely theoretical treatment will, in all probability, fail, when an operation is our next resource. A rowel should be inserted beneath the under jaw. This is sometimes very efficacious in cases of recent nasal gleet, though to place implicit reliance upon it when the disease has made any headway, cannot be done. It should be distinctly understood that both blisters and setons are absolutely useless unless the glands are involved, in which latter case (swelling of the cervical glands), both blisters and setons may be brought into requisition, particularly the blisters. The following injection should be thrown up the nasal passage three times each day: —

Sulphate of Copper, one ounce;
Boiling Water, one quart.—Mix.

Use, when cool, in quantities of a teacupful. Give internally, once a day, the following: —

Balsam Copaiba, half a fluid ounce;
Powdered Cantharides, four grains;
Pulverized Cubebs, sufficient to make a pill mass.

If this affects the urinary organs severely, stop at once, and give the following substitute: —

Extract Belladonna, half a drachm;
Rub up in Water, one ounce.

Repeat this dose every hour until all appetite is destroyed, then stop. Repeat this every fourth day, keeping up the injections daily. Have the animal's head steamed daily by placing about a drachm of carbolic acid and an equal quantity of aqua ammonia in a pail of boiling water, or use the nose bag as directed for common cold. Give the animal good, liberal diet, a sufficiency of tonics, gentle exercise, and general favorable surroundings. Bring into requisition good common sense, which is by no means as common a commodity as most people seem to believe. This, with the adoption of the above-mentioned treatment will be, as a rule, efficacious.

NASAL POLYPUS.

THE PECULIARITY OF THIS AFFECTION.

This is a pear-shaped body which grows in the nostril, sometimes entirely closing the passage. It is a vascular body composed of blood vessels covered by membrane, which hangs suspended by a stem.

WHAT TO DO FOR IT.

The best way to remove it is by a ligature of fine wire around the stem, which should be tightened every day until it is cut off. It is not a malignant growth.

CHAPTER IV.

DISEASES OF THE THROAT.

CONTENTS OF CHAPTER.

CHOKING—HIGH CHOKE—LOW CHOKE.—Position the horse stands in high choke—Where the obstacles lies—How to remove it by the hand—How to make a simple instrument to remove it—To remove if it be an egg—An ingenious method—Low Choke—The symptoms of low choke—How different the horse stands in this—Simple and safe method of relief.

BRONCHOCELE OR GOITRE.—Its character and size—A blemish easily removed—How to accomplish this and not injure the horse.

LARYNGITIS.—How it affects the windpipe—To detect its first stages—How it makes a roarer—Signs of getting worse—Signs of getting better—To treat it properly and successfully—Minute directions for the use of remedies—When to change them—Special directions during recovery.

CHRONIC COUGH.—Diseases where the cough is merely a symptom—When it is uncomplicated and local—What causes it—The best remedies and how to use them.

SORE THROAT.—When local and when a symptom—How a horse drinks with sore throat—What to give for it—How to use a gargle—When to blister the throat—A home-made remedy and a good one.

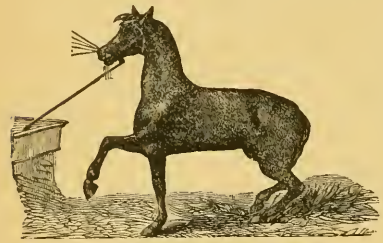
ROARING.—What it is and its cause—Only method of relief for a chronic case—How to detect an incipient roarer—The stable test—Directions for the cure of it.

CHOKING.

CHARACTERISTICS OF HIGH CHOKE.

In this accident the obstacle is lodged in the upper part of the passage to the stomach, and in some instances can be taken away by the hand. If relief is not afforded soon, the horse falls and dies of suffocation, and instant action is demanded. We have given an engraving plainly showing the appearance of the horse in high choke.

THE SYMPTOMS OF HIGH CHOKE,



POSITION IN HIGH CHOKE.

which makes it easy to determine, are as follows: The head is raised, and saliva covers the lips. The countenance is haggard, and the eyes inflamed and watery. The muscles of the neck are rigid, the breathing is loud, and the flanks heave. The body is in constant motion, the fore legs pawing and stamping, while the hind ones crouch and dance. Perspiration breaks forth, and intense agony is shown in every movement and action.

HOW TO RELIEVE IT IMMEDIATELY.

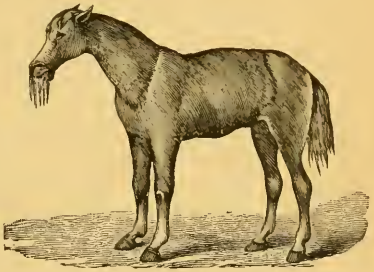
If it can be reached by hand, have the jaws securely held, insert the hand and withdraw the obstacle. If this cannot be done, it often can be relieved by a simple hook, which can be made in a few moments by using ordinary wire, as shown by our illustration. Insert the hook and work it down behind the obstacle, then with a sudden jerk withdraw it. If it should be an egg that is thus fixed in the gullet, it may be punctured by first thrusting a darning needle through it from the outside, and then smashing by a sudden blow on the side of the throat. Surgeons relieve it by an operation called tracheotomy.

INSTRUMENT TO RELIEVE CHOKING.

DESCRIPTION OF THE LOW CHOKE.

This occurs low down the passage, and is not so urgent as in high choke. It may continue for two or three days, and the horse finally dies of suffocation, caused by tympanites or accumulation of gas internally. We introduce an illustration which shows the difference in position the horse assumes in this case.

SYMPTOMS OF LOW CHOKE.



POSITION ASSUMED IN LOW CHOKE.

The animal ceases to feed, and if water is given, it is returned by way of the nostrils. The muscles are not rigid as in high choke, neither is the head held erect. Saliva flows from the mouth, and a copious discharge runs from the nostrils. The breathing is labored, but not noisy. The back is roached, and the flanks tucked up. The horse stands as though he wanted to elevate his hind parts, as shown in the engraving. In two or three days the accumulation of gas in the abdomen becomes excessive, the breathing quickens, the pulse fails, and he dies.

WHAT TO DO AND HOW TO DO IT.

Give any kind of oil, by the quarter of a pint, every hour. In the half hours between, give the following dose: —

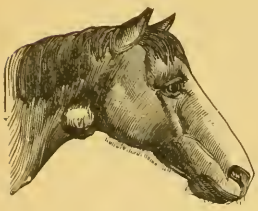
Sulphuric Ether, two fluid ounces;
Laudanum, two fluid ounces;
Water, half a pint.—Mix.

If it be returned and cannot be swallowed, administer chloroform by inhalation, until the horse is insensible, then extend the jaws, and using a probang, force the object slowly, steadily, and gently, into the stomach; the probang should never enter the stomach.

A home-made probang can be constructed out of a piece of whalebone three feet long, half an inch at one end, and tapering down to an eighth at the other, on the small end of which, completely covering it, tie a round sponge very securely. To use it, dip the sponge in oil or strong soap suds and squeeze nearly dry, and then insert.

BRONCHOCELE OR GOITRE.

MORE DAMAGE TO POCKET THAN TO HORSE.



APPEARANCE OF BRONCHOCELE.

It is an enlargement immediately under the throat, as shown by our illustration, very plainly. It varies in size from a chestnut to an egg. It is a blemish and injures the price of the horse, yet can be removed.

HOW TO DO IT VERY EASILY.

The horse can be worked during the treatment, which should commence by giving night and morning the following dose:—

Iodide of Potassium, one drachm
Liquor Potassa, one fluid drachm;
Water, half a pint.—Mix.

At the same time apply a portion of the following ointment, the size of a hazel nut, well rubbed in, twice a day:—

Iodide of Lead, one drachm;
Lard, two tablespoonfuls.—Mix.

If it creates a sore, omit for a few days. This will cure it.

LARYNGITIS.

DESCRIPTION OF SYMPTOMS.

It is an inflammation of the upper part of the wind-pipe or larynx, and is accompanied with dullness, a short cough during almost every inspiration of breath, and a slight enlargement under the throat. The horse resists examination of the part, and carries the head as though the neck was stiff. Often a hoarse sound, terminating in a grunt, can be detected, if the ear is placed against the wind-pipe. The breath is hurried and catching, the pulse full and throbbing, and the membrane of the nose almost scarlet. If not properly treated, it may leave the horse a confirmed roarer, by thickening of the membrane of the larynx.

SIGNS OF THE DISEASE GETTING WORSE.

There is an increased noise in breathing, while the breath and pulse become quicker. The cough is suppressed, and the nasal membrane changes to a leaden color. The horse stands unsteady and moves about. Partial sweats start out, and all the symptoms are aggravated.

SYMPTOMS OF IMPROVEMENT.

The membrane of the nose becomes more natural, and the breathing grows louder and more free. A white, thick discharge flows from the nostrils, and the breathing is easier.

HOW TO TREAT IT SUCCESSFULLY.

First, reduce the pulse to a more natural action by administering the following dose, every half hour, until its effects are shown:—

Tincture of Aconite, twenty drops;
Water, four tablespoonfuls.—Mix.

This is better than blood-letting, which is too depressing, and often causes a chronic form of the disease.

Apply the steam-bag, as shown by engraving, and as directed in "common cold." This is of great assistance in the treatment of this

disease. If it seems to distress the horse, apply for a few minutes only, then repeat it. Apply wisps of hay which have been soaked in hot water to the throat, and bandage.

Administer the following dose, three times daily, in addition to the other treatment:—

Extract Belladonna, one drachm;
Tincture of Aconite, twenty drops;
Tincture of Ipecacuanha, one fluid ounce;
Tincture of Squills, two fluid ounces.

Rub the belladonna up in a pint of warm water until dissolved, then add the other ingredients, and give at one dose. If the pulse is nearly natural leave out the aconite.

SPECIAL DIRECTIONS DURING RECOVERY.

When the horse gets better, insert a seton through the skin of the throat under the seat of the disease. Move this daily to keep up the irritation. The food should be moist and soft, with no hay. Soaked oats or boiled roots may be given, also bran mashes.

As the horse gets better, and is gradually changed to regular food, withdraw the seton, and blister the under side of the neck with:—

Tincture of Cantharides, one fluid ounce;
Camphorated Oil, half a fluid ounce.—Mix.

Apply a portion, with friction, three times a day, until a blister shows; as it subsides apply again. Dry food of every kind must be avoided. Dusty hay is an abomination in this disease. Soak it six hours before feeding.

CHRONIC COUGH.

THE DISEASES ACCOMPANIED BY COUGH.

Every one knows what a cough is, yet all do not know that in many cases it is merely a symptom of other and more serious disorders. It may be caused by dusty hay, cold water, etc. More frequently it is a symptom of farcy, glanders, broken wind or heaves, laryngitis, bronchitis, or some chronic disease of the lungs, stomach, or bowels.

WHAT CHRONIC COUGH GENERALLY IS.

It is a thickening of the mucous membrane which covers the larynx, accompanied by a morbid sensitiveness to any disturbing influences, proving a very annoying accompaniment for a drive.

WHAT TO DO TO RELIEVE IT.

It is sometimes very difficult to cure, and no medicine will relieve unless special attention be paid to warm clothing, pure air, and at the same time to dampened food. It may be troublesome to do this, but the most potent remedies will fail to relieve if these precautions are not taken.

Commence treatment with the following:—

Fluid Extract Lobelia, two fluid drachms;
Fluid Extract Gelsemium, thirty drops;
Tincture of Squills, ten fluid ounces.—Mix.

Give a teaspoonful once a day for a week, or increase if necessary. Let it trickle over the roots of the tongue. If there is swelling of the glands in the channel of the throat, blister severely with good cantharides ointment. Apply the blister until satisfied the swelling requires opening: then it *must* be opened largely to give free exit to all pus. Put a piece of quick lime as large as a lemon in the water to be drank the day before watering. If, after a few days' trial, this brings no improvement, substitute the following:—

Common Tar, two ounces;
Calomel, fifteen grains;
Linseed Meal enough to make a stiff mass.

Mix and divide into three balls, and give one every morning for three days, and then return to the first prescription.

If it prove still obstinate, it will be found to be merely an attendant on some more serious disorder, which must be treated under its appropriate head.

SORE THROAT.

SOMETIMES MERELY A SYMPTOM.

This is frequently a symptom of some graver disorder, and care should be taken to learn whether it is merely of a local character or a symptom.

HOW IT AFFECTS A HORSE.

There is a want of appetite, with trouble in swallowing liquids, the effort being accompanied by an emphatic jerky action, and audible sound. The most evident sign will be the return of part of the liquid through the nostrils.

WHAT ITS TREATMENT SHOULD BE.

In simple attacks, a warm blanket, a warm, well-ventilated stable, and soft food, will soon relieve it. If these measures, with bran mashes, do not loosen the bowels, after the second day, give the following dose: —

Pulverized Aloes, one drachm;
Essence of Anise, half a fluid ounce;
Water, one pint.—Mix.

If it still prove obstinate and not mend, prepare the following gargle: —

Chlorate of Potassa, one ounce;
Water, two quarts.—Mix.

Hold up the head and pour half a pint into his mouth, holding up his head for half a minute after, then let it drop and the gargle run out. Repeat from six to eight times a day. These are the best means to adopt. Should it be a bad case, rub some of the following blistering liquid upon the outside of the throat, three times daily, until it blisters: —

Tincture of Cantharides, one fluid ounce;
Camphorated Oil, half a fluid ounce.—Mix.

When the blister subsides, apply again, keeping the part irritated. A good home-made remedy is prepared as follows: —

Powdered Inner White Oak Bark, one tablespoonful;
Molasses enough to make a stiff mass.

Give at one dose twice a day. This is an excellent and cheap remedy.

ROARING.

WHAT IT IS AND ITS CAUSES.

Acute roaring often occurs in laryngitis, and may be caused by the tumor in distemper. Chronic roaring is caused by an alteration in the structure of the larynx or upper termination of the wind-pipe, which controls the passage of air into the lungs. It is caused by a spasmodic explosion of the air, which is followed by a deep roaring inspiration. It is often caused by a tight check rein used on young horses while growing, producing this alteration in its structure.

THE ONLY METHOD OF RELIEF OF CHRONIC CASES,

which is merely palliative, is to place a pad under the nose piece of the bridle, and thus limit the amount of air admitted to the lungs. Of course the horse cannot go through any severe and long continued exertion while this is being used.

METHOD OF DETECTING A ROARER.

Drive the horse sharply, say for a mile or so, and on stopping, apply the ear immediately to the windpipe. If he is an incipient "roarer" you will discover it at once.

ANOTHER TEST FOR A ROARER

is to take a stick with you into the stall, and catching the horse by a short hold on the halter, suddenly display the stick and make a motion as though to hit him a smart blow on the abdomen. He will spring forward with an audible grunt if a roarer. It is not an infallible test, however.

It is not a dangerous or fatal complaint, yet the powers of the horse are impaired, for no roarer can have the wind of a sound horse.

The food should be constantly changed, and in a mash give twenty grains of nux vomica. Tonics and iodide of potassium, in drachm doses daily, are also useful; hay and oats makes best feed, the latter being given in larger quantities relatively as compared with the former. If the roaring is due to any mechanical obstruction, have it removed if possible. The disease is sometimes hereditary. A little lime might be mixed with the water twice a day; the hay should be thoroughly shaken and wet, and of good quality.

CHAPTER V.

DISEASES OF THE LUNGS AND CHEST.

CONTENTS OF CHAPTER.

PNEUMONIA—INFLAMMATION OF THE LUNGS.—How to tell it from bronchitis or pleurisy—The first symptoms that show—How to examine to discover it—The first thing to do—The second step to take—Cautions about bleeding—How to clothe the horse—The kind and quantity of remedies to use—To treat during recovery—How to hasten recovery—What the food should be—Favorable signs—Fatal signs.

OVER-DRIVING—CONGESTION ON THE ROAD.—How it attacks the horse—Its fatal symptoms—What to do immediately—Remedies that are best—Cautions about wrong treatment—Congestion in the stable—How it differs—Its most prominent symptoms—What its treatment should be—What it may terminate in—How to avoid it.

BRONCHITIS—INFLAMMATION OF AIR PASSAGES.—What it is and its causes—Its prominent symptoms—Treatment by steam—Treatment by medicines—How to vary and apply remedies—What the fatal symptoms are—Cautions about giving wrong treatment—Avoid vile concoctions.

PLEURISY.—What disease it may be taken for—How to tell the difference between it and spasmodic colic—Symptoms described so anyone can tell it—A sure and certain test for it—Particular directions in treating it—The first signs of improvement—Fatal signs—Proper remedies and how to use them—Cautions about what to avoid.

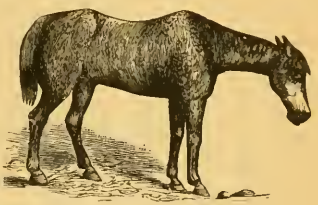
PNEUMONIA—INFLAMMATION OF THE LUNGS.

HOW IT DIFFERS FROM BRONCHITIS OR PLEURISY.

Many writers ignorantly confound congestion from over-driving, bronchitis, or pleurisy, with inflammation of the lungs, or as different stages of pneumonia. Later developments have shown them to be distinct diseases, and state the difference, and it will be well for the

reader to remember that bronchitis affects the tubes that penetrate and ramify the structure of the lungs, and that pleurisy is an inflammation of the pleura, or membrane that covers the lungs, while pneumonia is inflammation of the cellular portion of the lungs.

THE FIRST SYMPTOMS OF AN ATTACK.



FIRST APPEARANCE OF PNEUMONIA.

It is rather lingering in its development, the breathing somewhat accelerated and labored, and the pulse but slightly increased. The artery is full, and the beat seems more like a surge of blood which swells the artery for a moment, and then is still for an interval and again repeats. The horse is dejected, with head and ears drooping, as shown by our illustration. Its legs are cold, and separated apart as if to prevent falling through giddiness. The coat is rough, and the body without warmth. All visible mucous membranes are discolored, the bowels costive, and all symptoms show that the whole structure of the lungs is congested.

HOW TO EXAMINE AND TO TEST IT.

Place your ear at his side. In health there is only a gently blowing sound to be heard. If more than that be heard, especially if something within the chest seems to grate or suck, or it has an additional sound, like a huge pair of bellows violently at work, it is surely pneumonia.

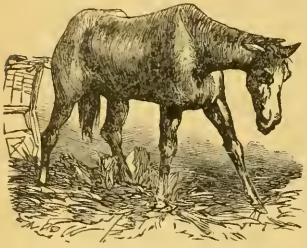
THE FIRST TREATMENT OF AN ATTACK.

If shod, pull off the shoes, and, if possible, put in a roomy box stall, the floor of which has been strewn with sawdust, sand, or a like substance. If in warm weather, it is prudent to keep the sand or sawdust damp, as the disease is subject to changes of location, and may affect the feet, and a soft cool floor is best adapted to prevent it.

THE SECOND STEP TO BE TAKEN.

The common custom of the ignorant is to bleed until the animal falls, and as bleeding always quickens the pulse, bleed again soon.

Don't do it. Many a horse has been bled to death, or rather bled so much that no vitality remained to fight disease. If the horse seems very dull and almost unconscious, bleed early, only once, and then only sufficient to make the horse raise his head and show more signs of life. If a pint taken from him does this, take no more. If it can possibly be avoided do not bleed, and certainly do not if the blood is black and thick, and dribbles down the neck, and does not spurt out of the vein. If it is in winter, put a hood over the head and neck, and blanket him, leaving sufficient ventilation, and keep the stall or room filled with steam. Take off the blanket after the steam has filled the stall, but keep up the steam all the time. Give as early in the disease as possible, the following dose:—



A BAD CASE OF PNEUMONIA.

Tincture of Aconite, twenty drops;
Sulphuric Ether, two fluid ounces;
Extract Belladonna, one drachm.

Rub up the belladonna in half a pint of water, and then mix. Repeat this dose three times during the day, and once at night.

TREATMENT DURING RECOVERY.

When the pulse gets more natural, diminish the amount of the aconite, and as the breath grows easier, diminish the quantity of the belladonna. Increase or diminish the medicine as the symptoms grow worse or better: thus, if the pulse does not amend, six, or even nine doses of twenty drops of tincture of aconite, in half a pint of water, may be given in twenty-four hours. Should the breathing be severe, the belladonna may be increased in like manner.

WHAT THE FOOD SHOULD BE.

Great care must be taken not to overload the stomach or allow hearty food. Water may be allowed or hay tea given (made by pouring hot water on a quantity of hay and strained and cooled.) As the horse surely gets better, a little scalded oat meal may be

added, making it thicker every day the horse mends. A couple of pounds of boiled potatoes or carrots may be added now, and as his appetite grows more eager, a pint of bruised oats may be thoroughly scalded and given six times a day. Do not permit a full meal. A single allowance of hearty food will bring back the disease with aggravated symptoms. Let some days pass before any hay is allowed, as a distended stomach interferes with breathing. Remember that it is with brutes as with the human family, as necessary to regulate the food of the sick as to give the medicine.

FAVORABLE SYMPTOMS OF IMPROVEMENT.

The first marked favorable symptom will be the lying down of the horse, and if this is attempted, do not disturb, as its strength can more easily be restored by rest and quiet.

WHAT TO DO FOR DELAYED RECOVERY.

If the horse does not improve rapidly, be very particular and careful about the feeding, and at the same time, apply a blister to the front of the throat down to the chest and between the legs. After the effects of this has nearly ceased, apply another upon the sides of the throat and upper part of the ribs, but not on the side or lower part. Give tonics; they are demanded.

OVER-DRIVING—CONGESTION ON THE ROAD.

WHAT CAUSES THIS ATTACK.

The horse, by very severe or long continued driving by brutal men, is taxed beyond its strength, and reels and drops in its tracks. The violent exertion reduces the nervous strength of the horse so low, that the larynx contracts to such an extent that the blood is not oxygenated or purified, and mounting to the brain, produces temporary insensibility and congestion of the lungs with blood.

SYMPTOMS OF CONGESTION.

The horse, by exhaustion, reels and falls, and the body, notwithstanding the violent exertion, feels clammy cold, the breathing is difficult, and every vein is distended and seen.

IMMEDIATE TREATMENT NECESSARY.

Bleed at once, even with a knife, as it is easy to see the veins, and a pint taken now is of more value than a gallon taken an hour hence. Cover the body at once and lead to the nearest stable, double the blankets, bandage the legs, cover the neck, and keep the horse warm. If possible, heat the stall by fire, if not, by tubs of hot water. Our object is to bring the blood to the surface and relieve the the congested lungs.

Now give, if possible, every half hour, without noise or excitement, the following dose: —

Sulphuric Ether, one fluid ounce;
Laudanum, half a fluid ounce;
Water, half a pint.—Mix.

Should no druggist be at hand, beat up two tablespoonfuls of turpentine with the yolk of an egg; mix it with a half a pint of water, and give every half hour. Give ample bed, and put a pail of gruel within easy reach of the horse. Remember that the horse must not be left day or night for thirty hours, as its fate will be decided in that time.

CAUTIONS ABOUT WHAT NOT TO DO.

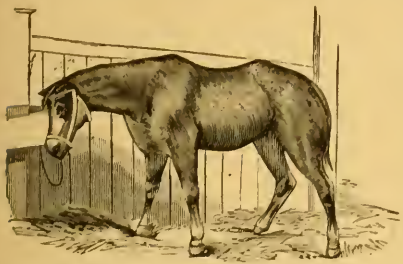
Don't give alcoholic stimulants or stimulants of this character. To be sure the horse will seem to mend after the first dose, but the third dose generally shows that the horse is becoming worse; bloody water is blown from the nostrils, partial sweat breaks forth, the eye assumes a grey appearance. To be sure, the horse seems to walk with a firmer step, but just at this moment falls and expires.

CONGESTION IN THE STABLE.

This generally attacks fat, sleek, family horses, who are suddenly called upon to do an amount of traveling, or draw a load beyond their strength, or debilitated livery horses.

ITS MOST PROMINENT SYMPTOMS.

The horse is hardly tied to the manger before symptoms of exhaustion are seen; the head hangs down and the food not noticed. Soon he commences panting and breathing quickly. Sometimes this is mistaken for advanced symptoms of inflammation of the lungs. It is probable it would terminate in this way if nothing were done to avert it. The sudden change from severe exertion to rest produces a great reaction of the system. The capillary vessels and every organ of the body is in a state of great congestion. The arteries are round and gorged, and the pulse may beat quicker or slower than mentioned in most books, but will be comparatively feeble and hardly stirs. Partial perspiration may appear upon the body, but no warmer than the skin. The feet are cold, eyes fixed and hearing lost. He does not move when commanded, and except breathing, which is involuntary, yet disordered, all natural functions seem stopped.



FIRST APPEARANCE OF CONGESTION.

WHAT ITS TREATMENT SHOULD BE.

If the horse be attended to at once the symptoms will rapidly disappear. Give the following at one dose:—

Sulphuric Ether, two fluid ounces;
Laudanum, two fluid ounces;
Cold Water, one pint.—Mix.

As the horse is not conscious, give with caution and moderation, and do not get excited and use brute force. A little patience and all will be swallowed or the fumes inhaled, which is nearly as good as giving the dose. If in ten minutes the horse has not recovered, or but partially so, administer the same sized dose again. It will be but seldom that any more than two doses will be required, yet do not neglect, but watch twenty minutes more, as the symptoms frequently

vanish and then reappear. Empty the manger and rack, for though the horse would eat, no solid food must be allowed until the next day, but a pail of gruel, set so the horse can reach it without raising his head high, should be given. The horse should be lightly blanketed, and the next day will be as well as ever.

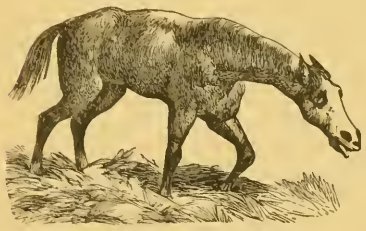
WHAT ITS TERMINATION MAY BE.

This disease, like the fainting fits of human persons, used to be treated by bleeding, but to bleed a debilitated horse is but to increase the disease and delay recovery. Remember that this disease differs from congestion on the road, both in degree, intensity, and constitution of the subject generally. It generally terminates in a much more serious disease if not noticed, or neglected to treat by remedies at once. Pneumonia, or inflammation of the lungs and pleurisy are generally the diseases which follow, but it has terminated in enteritis or inflammation of the intestines, fatally in some instances.

BRONCHITIS, OR INFLAMMATION OF AIR PASSAGES.

WHAT IT IS AND WHAT ITS CAUSES ARE.

Originally, it is an inflammation or congestion of the mucous membrane or delicate lining of the wind-pipe, and air tubes of the upper part of the lungs, but has also an aptitude for involving like membranes of the whole cavity of the chest, and is generally caused by exposure of the horse to cold winds or storms, especially after being heated by driving. The horse simply catches a cold, which affects these parts much in the same manner and with results similar to its action on mankind.



COUGHING DURING A BAD CASE OF BRONCHITIS.

WHAT ITS SYMPTOMS MAY BE.

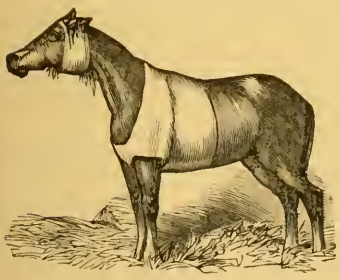
It is a very insidious and deceptive disease in its early stages. Sometimes there will

be a short cough denoting irritation of the air passages, and a slight increase of redness of the membrane lining the nostrils, yet the appetite will be unimpaired and many times increased. Many persons are deceived thereby, for as long as a horse eats, he is well enough to work, they say; but this will not always prove a safe rule. Soon the cough becomes evidently suppressed and painful, the appetite gone, and the horse is averse to moving. The breathing quick and easily heard, the lining membrane of the nose is very scarlet, and mouth hot, dry and clammy. The legs and body of uneven temperature—here cold as ice, there a dusty heat.

DIRECTIONS FOR THE TREATMENT OF IT.

If possible, put the horse in a box stall, if not, in a warm stable. If it is possible, have the air charged with steam from boiling water, if not, make a nose bag and steam the horse's nose as directed under head of "Common Cold," and as shown by our engraving. Don't scald the horse, and see that the steam is not too great in quantity or too hot at the nose. Scald some hay and apply to the throat by a bandage, and renew as often as cold. Apply flannels wet with cold water to the back and sides, as shown by our illustration, covering closely with a blanket and renew immediately when warm, for several hours, then let them remain on, but do not suffer them to dry. They must be worn for a week after restoration, though not wet. Now prepare the following, after the scalded hay has been applied for two hours to the throat:—

USE OF NOSE-BAG FOR COLD.



HOW TO CLOTHE DURING BRONCHITIS.

Burgundy Pitch, half a pound;
Powdered Gum Camphor, two ounces;
Powdered Capsicum or Red Pepper, half a drachm.

Melt the pitch on a fire, take the vessel off and mix in the other ingredients and apply while warm (not hot), to the neck from the breast up to the throat.

If there is considerable aggravated congestion, which can be told by the pulse, give the following dose: —

Sulphuric Ether, one fluid ounce;
Laudanum, one fluid ounce;
Water, half a pint.—Mix.

The above dose should be given every half hour, and if no perceptible effect is produced upon the pulse after the third dose, substitute the following: —

Tincture of Aconite, twenty drops;
Belladonna, half a drachm.

Rub the belladonna up in an ounce of water, and then add the aconite. Give the above dose every half hour till the pulse mends, then drop the aconite, but keep up the belladonna in half-drachm doses, in addition to the first prescription mentioned above, which ought to be resumed should amendment ensue from the use of aconite. If bowels are costive move by injections of warm soap suds. Let the food be almost entirely thick gruel, for all solid food must be withheld, especially during the acute attack. The chill ought to be taken off the water drank. Boiled roots, crushed or scalded oats may be given next, and the hay should be dampened the first month before given.

WHAT THE FATAL SYMPTOMS ARE.

A FATAL CASE OF BRONCHITIS

The pulse continues unamended at first, but soon grows very quick and tremulous. The breathing becomes very painful even to spectators. Every inhalation seems to shake the body, and the nasal membrane takes a bluish tint. A foul bloody froth hangs about the nostrils, and the eyes are dull

and fixed. The cough is most distressing and occurs in fits, and during the paroxysms the animal reels about. The cough shakes the sore lungs and checks the breathing, already near suffocation. It continues until discolored fluid is ejected from the nostrils, and a brief respite ensues. As time progresses, the fits become more severe and much longer, while the strength even more rapidly decreases.

WHAT NOT TO DO IN THIS CASE.

Never bleed. When mucous membranes are affected, never deplete by physic or bleeding. A small amount of blood taken may produce a prostration no tonic will restore; a diarrhœa may be produced by even a small dose of aloes, which no astringent can check. This disease is very liable to change of location, and therefore be careful what you do. Better never give any medicine internally unless you want to produce a certain effect. Above all, avoid unreliable advice of kind neighbors who know no more, nor as much as yourself, or the villainous compounds of self-sufficient persons, whose ignorance only is equalled by their ridiculous assumptions. A little common sense on your part is worth all their concoctions.

PLEURISY.

THE CAUSES OF THIS DISEASE.

Exposure, overdriving, or too severe exertion in a race without proper care after. Horses five or six years of age are most liable to its attacks.

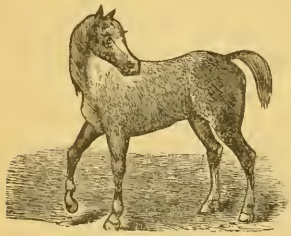
WHAT IT IS AND WHAT MISTAKEN FOR.

It is an inflammation of the fine membrane covering the lungs and also lining the chest. It generally terminates the second day, and consequently the symptoms are quickly developed, and this violence on their first appearance has been frequently mistaken for spasmodic colic.

DIFFERENCE BETWEEN PLEURISY AND SPASMODIC COLIC.

The pulse in spasmodic colic is always natural at the commencement, and the attacks of pain, when they first occur, are always of short duration. In pleurisy the pulse *strikes* the finger, and is strong. The artery seems thin, the pain is continuous, and the agony never remits or ceases. The horse never feeds, as he often does in colic between the attacks; the body is hot, and the feet icy cold.

WHAT ITS SYMPTOMS GENERALLY ARE.



FIRST SIGNS OF PLEURISY.

The muscles are sometimes knotted and drawn up in ridges, and partial perspiration breaks forth on parts of the body. A cough is sometimes, but not always, present, and is always suppressed and dry, more like a hack. The ear, placed against the ribs, detects a grating sound. The fore foot is scarcely ever quiet and constantly paws. The breathing is peculiar, for the pain prevents a full respiration, and appears short, jerking, quick, and always imperfect.

A SURE AND CERTAIN TEST FOR IT.

Pressure made on the spaces between the ribs sometimes almost deprives the animal of consciousness, for the pain is so intense. The animal shrinks, and often is angered, tries to bite or kick the person applying the test.

DIRECTIONS HOW TO TREAT IT.

At the first commencement, take blood enough to ease the horse, but not a drop more. Bandage the legs with flannel, but leave the body uncovered unless in cold weather. Give every fifteen minutes the following dose to allay pulse and fever: —

Tincture Aconite, twenty drops;
Warm Water, four tablespoonfuls.—Mix.

Feel the pulse before each dose, and as soon as softened, stop the above. Now give the following dose every second hour, which will prevent further congestion of the pleura: —

Sulphuric Ether, one fluid ounce;
Laudanum, one fluid ounce;
Water, a tumblerful.—Mix.

Follow the above directions for one day and night, and depend on the aconite to allay fever and keep down the pulse. On no account bleed again. If, after the symptoms get better, the cough remains, the nose-bag steaming apparatus described under "Common Cold," will relieve it.

THE FIRST SIGNS OF IMPROVEMENT

are a quieter breathing, a softening of the pulse, and a return of appetite. When these occur, blister the throat and chest with

Tincture of Cantharides, one fluid ounce;
Camphorated Oil, half a fluid ounce.—Mix.

Apply with friction, and repeat it till blister shows. Repeat the blister if signs of disease linger. If the bowels are costive, move by copious injections of blood-warm soap-suds.

THE FATAL SIGNS OF THE DISEASE

are yellow transparent discharges from the nostrils, occasionally streaked with blood, and more or less discolored. A terrible anxious expression of countenance, quickened breathing, a rapid sinking pulse, and a leaden color of the nasal membranes. It generally terminates in dropsy of the chest.

CAUTIONS AND GENERAL DIRECTIONS.

Nothing must be given the horse except luke-warm water during the serious stage of the disease, which may be substituted by meal gruel, and that in turn by soft food as he gets better. Never give physic in this disease. It will prove as fatal as poison in its depleting tendency. Trust to aconite within, than depend on bleeding except as instructed.

CHAPTER VI.

DISEASES AND AFFECTIONS OF THE STOMACH.

CONTENTS OF CHAPTER.

ACUTE GASTRITIS — INFLAMMATION OF THE STOMACH — POISONING.— When caused by quack condition powders—Drugging a race-horse—How done and how to relieve—Peculiarity of the symptoms in poisoning—Variation of the symptoms—How the poison acts—Difference between man and horse—What to do—Antidote for poisoning from condition powders—Antidotes for injury from acids—Antidotes for poisoning from alkalies or lye—The best medicine to use when poison is unknown—How to give medicine quickly in bad case.

INDIGESTION—CHRONIC INFLAMMATION OF THE STOMACH.—How it shows itself and its prominent symptoms—Peculiarities of a morbid appetite—The course to take to treat the disease—To tone up and strengthen the stomach—Proper food to be given.

CRIBBING—WIND SUCKING.—What it is and how done—Its causes—Its treatment—Jockey tricks to conceal it—Exposure of them.

BOTS.—Developments made by late scientific investigation—Diseases which are often mistaken for bots—How bots have been killed—Time of year when no bots are in the stomach of horse—How they propagate—How they attach themselves to the stomach—Impossibility of medicine to reach their mouths—How long bots live in turpentine, kerosene, carbolic acid, etc.—The only injury they do.

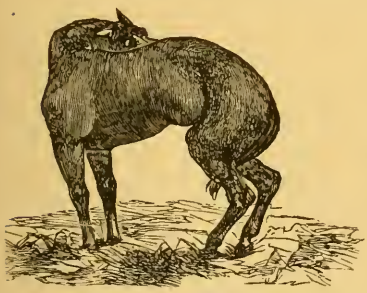
SPASM OF DIAPHRAGM—THUMPS.—Acute symptoms during a race—How to save the horse—Signs of fatal symptoms—Warning to riders—Directions for immediate treatment—What to give and how to care for the horse—Chronic form of the disease—What to do for it.

POISONING—ACUTE GASTRITIS, OR INFLAMMATION OF THE STOMACH.

WHAT IS SOMETIMES THE CAUSE OF IT.

Often this arises from the use of secret nostrums or condition powders of would-be horse doctors, which the farmer buys to tone up his horse. It is also sometimes done maliciously to prevent a favorite horse winning a race. Narcotics are more frequently used for this purpose, as they deaden the sensibilities of the horse and lessen his vigor.

THE PECULIAR SYMPTOMS OF POISONING.



SIGNS OF POISONING.

There will be a loathing of food, accompanied by extreme thirst. Redness of the nasal membrane, with a discharge of ropy saliva. Frequent eructations, or belchings of wind from the stomach, which has a pungent smell. Signs of spasmodic colic prevail, with tucked-up flanks, and heaving, panting breath. A small, quick pulse, and often violent dysentery. Straining and passing of mucus in large quantities The anus may protrude and show signs of inflammation. There will be great prostration of strength, followed by convulsions and death. Such are the many symptoms, yet all will not be present, and some will vary according to the intensity of the case.

WHAT POISONING DOES AND WHAT TO DO.

Those poisons which do not kill instantly, irritate and corrode the coats of the stomach and intestines. Narcotics merely destroy nervous sensibility. It is more difficult to treat poisoning in a horse than in man, for emetics are useless. Antidotes only can be relied on. Below will be found directions for treatment of all cases.

POISONING FROM CONDITION POWDERS.

The irritant here is probably antimony, yet it may be arsenic. Give the following dose every five minutes until two doses are given:

BAD CASE OF POISONING.

Tincture Cinchona, one pint;
Water, two quarts.

Powdered Peruvian bark may be given instead. Follow with equal parts of sulphuric ether and laudanum, two ounces each in a pint of water every fifteen minutes.

POISONING FROM ACIDS OF ANY KIND.

These corrode the mucous membranes. Lime water, baking soda, or weak lye, mixed with starch water, should be given, followed by a quart of oil. If strength fail and much pain exists, give the ether and laudanum as above.

POISONING FROM NARCOTICS.

It is probable that this would be opium, which can be best combated by giving a strong decoction of nut galls, or a solution of tannic acid in starch water, followed by stimulants, such as sulphuric ether and carbonate of ammonia.

POISONING FROM ALKALIES OR LYE.

Give a quart or so of vinegar in same quantity of water, and follow with a quart of oil. Keep up the strength and allay pain by directions given above. When the poison is unknown, the following prescription is the best which can be given in such a case:—

Sulphuric Ether, three fluid ounces;
Tincture of Opium, three fluid ounces;
Carbonate of Ammonia, one drachm;
Cold Water, one quart.—Mix.

Repeat the above in a few moments. Of course you will leave out the opium if you suspect narcotics, which will be shown by a stupid, dull appearance. A stomach pump is often very useful to inject drenches, by means of a rubber pipe through the nostril into the stomach, in the manner shown in the engraving.

TO GIVE REMEDIES QUICKLY.

CHRONIC INFLAMMATION OF THE STOMACH.

DESCRIPTION OF THE DISEASE.

The horse being unable to vomit, cannot show, in the ordinary way, any disorder of the stomach, unless it takes the severe form of colic, etc. Indigestion shows itself by irregularity of the bowels and capricious appetite. The animal purges violently, which stops as suddenly as it commenced, and costiveness takes its place, while no error of diet is known to have caused it. Its passages seem brittle and crumble at the slightest touch, and have an offensive smell.

THE PROMINENT SYMPTOMS

are a dry cough, the breathing catching, and the mouth feels cold. The eyes are sunken and the belly baggy. The hair stares and is dry and ragged. The body becomes emaciated, and the anus is lax and prominent. The slightest exertion produces a profuse sweat. The most remarkable symptom is the

PECULIAR AND MORBID APPETITE.

which causes the horse to gnaw old bricks, eat mortar, or destroy the woodwork of the stall. Often he will refuse bright hay to eat the

bedding or dirty straw. It is evidence that there is a morbid irritability of the stomach which the horse vainly endeavors to relieve. The food eaten but adds to the trouble, not being digested, ferments.

HOW TO BEST RELIEVE IT.

No physicing or bleeding should be done. The only method to adopt is to give tonics and remedies to palliate the evils, and aid nature to restore the natural functions of the stomach. To do this, the following ball must be given night and morning: —

Strychnine, half a grain;
Carbonate of Ammonia, half a drachm;
Extract Belladonna, half a drachm;
Extract Gentian, half a drachm.

Mix with powdered quassia, sufficient to make a stiff mass. After giving the above for one week, change the medicine by giving the following night and morning: —

Solution of Arsenic, half a fluid ounce;
Tincture of Ipecacuanha, half a fluid ounce;
Muriated Tincture of Iron, one fluid ounce;
Laudanum, one fluid ounce.—Mix.

Give the above in a pint of water. As the horse gets better, give night and morning the following ball: —

Quinine, one scruple;
Powdered Anise Seed, half an ounce;
Sulphate of Iron, two scruples;
Bicarbonate of Iron, two scruples.—Mix.

The food must be dampened, and it would be well to feed soft food for the first week. A tablespoonful of baking soda should be sprinkled over each feed. No good, or at least but slight, benefit can be expected from the remedies, if care is not taken in regard to food as well as grooming.

CRIBBING.—WIND SUCKING.

WHAT IT IS AND HOW DONE.

The horse rests his upper incisor teeth upon any solid or firm place, and by a muscular effort, a portion of gas is eructated or belched from the stomach with an audible sound. It is generally preceeded by licking the manger or of any iron or cold substance. It is a sign of a disordered stomach and indigestion.

WHAT TO DO FOR IT.

Sometimes a piece of rock salt left in the feed-box will stop a new beginner. If a little common baking soda or even wood ashes be given occasionally, it will to a certain extent prevent it. If these simple means do not prevent it, dampen the food and sprinkle over it a tablespoonful of baking soda. Mix also with the grain a handful of pulverized inner bark of the white oak. If this does not stop it treat the horse for "Indigestion."

OTHER MEASURES OF RELIEF.

These are mostly mechanical. One method is to buckle a strap closely around the neck at the throat. This can only be used in the stable.

JOCKEY TRICKS.

Shrewd dealers in horses, who only desire to stop it long enough to sell the horse, have several ingenious methods of stopping it for the nonce. The soap trick, is to rub a bar of soap over the manger, feed-box, or any prominent part where the horse would be likely to rest his teeth. Often they saw passages between the upper teeth, in front, to prevent it. Rubbing tallow on the outside of the front upper teeth under the upper lip, will also stop it for the time.

BOTS.

EXPLOSION OF OLD FALLACIES AND IDEAS.

It is needless in this work to go into details, or produce proofs to show that the evils that are caused by bots, are imaginary; that the symptoms which were supposed to indicate bots, were signs of colic, pleurisy, etc. Investigations by scientific men have exploded the old fallacies, and no intelligent man now holds to this belief. Many a nauseous dose and many a corroding poison has been given as "bot medicine." They succeeded in killing the bots, but they always killed the horse first. We stand ready to prove the following statements by the intelligent and learned men of the profession. It will relieve many men, who have not given it any attention, to know

WHAT HAS BEEN PROVEN ABOUT BOTS.

Investigations have never yet discovered the least sign of bots in a horse's stomach the latter part of the summer or early autumn, notwithstanding many people treat horses for them during that period. It is because the bots have remained their allotted time in the horse's stomach, and have been passed out into the manure, to turn into the fly which lays the egg that again produces the bot.

Investigation has never yet found a case where the bot had bored his way through the stomach, unless the horse had been dead long enough to stop secretions and decomposition of the stomach to begin.

From the manner in which the bot attaches himself to the stomach and buries his mouth in the insensible soft mucous, as well as his location in certain parts of the stomach, it is manifestly impossible for any medicine to reach the mouth of the bot and make him let go. As to his letting go to feed on the tempting "milk and molasses" of the quack bot doctor, it is simply bosh. The skin of the bot is so thick and leathery, that it will live for several minutes in turpentine, kerosene oil, carbolic acid, etc. Do you think, then, that it is possible to give anything which will destroy them?

The only injury they can possibly do, is, that when they are in large numbers, they may prevent proper nutrition of the horse.

SPASM OF THE DIAPHRAGM.—THUMPS.

ITS WARNING SYMPTOMS AND SOUND.

Sometimes a horse out of condition is entered in a race, wherein broken heats push him beyond the powers of his endurance, and he is taken with what is called "spasm of the diaphragm." The rider becomes conscious of a strange and loud noise coming from the body under him, rather behind his seat. This is a warning not to be unheeded. Unless the pace is checked and the horse stopped, he will fall violently to the ground after a few more strides.

WHAT SHOULD BE DONE IMMEDIATELY.

The rider should dismount instantly, and cover the loins with anything at hand. The girth should be loosened, and after taking breath, the horse should be led to the nearest stable. Now give the following dose, every fifteen minutes, for one hour, after which, give every hour for four hours, and then gradually increase the time between doses, until it is finally withdrawn:—

Sulphuric Ether, two fluid ounces;
Spirits Camphor, half a fluid ounce;
Tincture Opium, one fluid ounce;
Cold Water, one pint.—Mix.

No violence must be used in giving the above, or the benefits will not be received.

In the meantime, many other things are to be done. A valuable horse is to be saved. Put a man at each leg to bandage it at once. Have another man sponge out the mouth, nose and eyes, with cold water. Have all superficial dirt removed, and the hood and blanket put on immediately. Wet swabs should be put on the feet and a pail of thin gruel stood in easy reach. Keep the horse quiet and well cared for, day and night, until danger is past.

SIGNS OF FATAL TERMINATION.

It is not necessarily fatal if the rider will take warning in time. If the rider persists in trying to "come under the wire," it may end

fatally. This is heralded by icy cold feet, a fetid breath, and a yellow discharge from the nostrils. The pupil of the eye enlarges, and the pulse at the jaw is lost. The heart only flutters, while the horse wanders round and round in his box, and finally drops, and death wins the heat.

CHRONIC CASES OF THIS DISEASE.

There are many chronic cases of a variety of this disease, wherein the horse, after any severe exertion, or during ordinary driving, will be attacked by spasm of the diaphragm, or palpitation of the heart. But little can be done for these cases. As a general thing, it only affects those horses which have been broken down, or are getting along in years. Careful feeding of soft food, and more careful driving, will prevent its attack. A horse of this kind cannot be relied on. The treatment recommended under head of "Partial Paralysis" will do much toward toning him up.

CHAPTER VII.

DISEASES OF THE ABDOMEN AND INTESTINES.

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SPASMODIC COLIC.—How it affects the intestines—Its first stage of attack—How it intermits and commences again—Its second stage—Its increase of pain and action—The third stage of an attack—Intense pain and mad plunging—How it differs from flatulent colic—When inflammation of the bowels begins—How the pulse changes—Plain directions for recognizing—Foolish methods of treatment—The proper and successful method—Its easy application—What to do when this cannot be had—When to use injections—How and when to blister—Sure sign that another disease is present.

FLATULENT OR WIND COLIC.—Its cause—Symptoms in its different stages and how they differ from spasmodic colic—How any one can tell the difference—Its later and fatal symptoms—How to check formation of gas—What to give in addition—What to use if medicine cannot be had—Exercising the animal—When medicines fail, how to relieve by an operation—Where to insert the knife and tube—A homemade substitute—Treatment during recovery—To prevent another attack.

ENTERITIS—INFLAMMATION OF THE INTESTINES.—Its fatal and destroying character—How long it lasts—The first warning sign—Difference between symptoms in colic and this disease—How to avoid mistaking the disease—Different tests—An infallible test under any circumstances—First treatment—Active treatment—What not to give—To physic without medicine—When to blister—Treatment during recovery—Important directions to be followed.

ACUTE DYSENTERY.—Its causes, character and symptoms—The active progress of the disease—What to do for it—Final treatment during recovery.

DROPSY OF THE ABDOMEN.—Its origin and distinguishing symptoms—A test for it—General appearance of the horse—The best treatment for it.

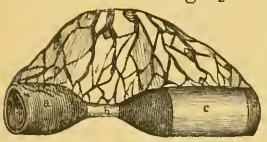
ABDOMINAL INJURIES.—What they are—Signs of a ruptured diaphragm—Test for a ruptured spleen or liver—Ruptured stomach—Intro-susception of intestines—Only treatment.

WORMS.—How they hurt colts—How they change their growth—Signs of worms—The kind of worms—What to do for them—To prevent worms—To relieve posterior irritation and rubbing the tail.

SPASMODIC COLIC.

PECULIAR CHARACTER OF THIS DISEASE.

This disease is an inflammatory spasmodic contraction of the muscular coat of the intestines, which is so intense as to expel the blood from the contracted part and force it into adjoining portions, which become highly congested. When it occurs at a part of the intestine distended by food, it arrests its progress and causes most excrutiating torture. Our illustration shows a small section of intestine affected by colic. The place marked *b* shows how forcibly it contracts during a gripe of pain, while *c* shows a portion lately attacked, but now free, except that it is pale from expelled blood. The parts *a a a*, are highly congested with additional blood forced into them from the parts *b* and *c*, which, if continued and not relieved, would end fatally in inflammation of the bowels. It most often attacks the small intestines, and dodges from point to point, leaving a short cessation of pain between the attacks, increasing in severity and frequency as the disease lingers, until there are no intervals of ease from pain.

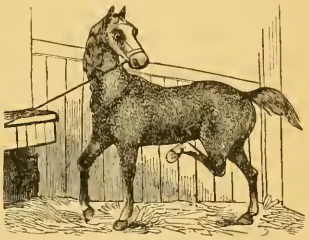


SECTION OF INTESTINE CONTRACTED BY COLIC.

WHAT OFTEN CAUSES ITS ATTACKS.

It is most frequently caused by hard, severe driving, often without feeding, or with a heavy feed, or a change of food; yet colic caused by feeding, generally is a flatulent attack, and not of this character. Some horses cannot take aloes without being attacked by it; others seem to be peculiarly liable to it on any extra exertion.

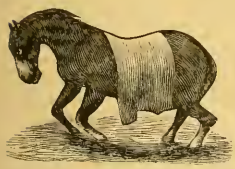
THE FIRST STAGE OF SPASMODIC COLIC.



FIRST SIGN OF SPASMODIC COLIC.

It always commences suddenly with a sharp spasm of pain in the bowels. The horse was evidently all right and feeding naturally, when, without any visible cause, the head is raised and feeding is stopped suddenly. This is the first gripe, and if the pain lasts a few seconds, the hind foot is lifted to strike the belly, the fore foot begins to paw the ground, while the nose slowly points to the flank. Our illustration fairly shows the excitement the horse labors under in this stage. The pain will now subside, and the horse will again commence to eat, when a second attack, which lasts longer than the first, and is more severe, follows. Again it ceases and again it attacks, evidently growing more severe. Now we have

THE SECOND STAGE OF SPASMODIC COLIC.



SECOND STAGE OF SPASMODIC COLIC.

Now the horse evidently desires to lie down. It crouches as though it would, then changes its mind and turns around, suddenly assuming an erect attitude. It now paws and strikes with its hind feet with greater vigor, and looks towards the flank with a morbid fire in its eye, and there is an increase of pain.

THE THIRD STAGE OF SPASMODIC COLIC.

If relief has not been given before, the spasms increase, until there is no cessation of pain, and the horse gets wild and fierce. The

pawing is more brief but energetic, and often the foot is raised to be violently stamped on the ground. The horse now does not attempt to feed, but stares for a minute at a time at the abdomen. Suddenly, without any warning, the horse leaps up and falls violently to the floor, evidently trying to ease the intense pain. It now rolls from side to side as shown in the cut, and will sometimes sit partly upon his haunches. This is seldom however. He sweats freely, which commences earlier than in wind colic. The fæces are at first excreted, often in small quantities; they give you the impression that there exists alternately constipation and diarrhœa; the aqueous fluids are excreted in diminished quantities, and numerous ineffectual attempts are made at voiding. By making a rectal examination, the bladder will be found distended, which is due to the stricture of the sphincter muscle of that vessel and constriction of its neck. In making ante-mortem examinations, it is difficult to ascertain with certainty whether the small, large, or both intestines are the seat of disease. When the pawing is excessive, and the pains are sudden, the great probability is the disease is located in the small intestines; but when the animal backs up against the wall and presses against it, the probability is the trouble is in the colon. The great distinguishing symptoms presented between spasmodic and flatulent colic are, that in the former the pains are not so continuous. The abdomen, loins, sides, and all the external covering of the viscera are extremely sensitive to touch, which is not so much the case in the latter, and in flatulent colic we have a bulging of the walls of the abdomen from the gas. This symptom is absent in the former.

THIRD STAGE OF SPASMODIC COLIC.

WHEN INFLAMMATION OF THE BOWELS COMMENCES.

If proper relief is not afforded, it will pass into inflammation of the bowels. The pulse, which at the commencement was natural, now quickened by the pain and inflammation, becomes hard and wiry, and a more serious disease has set in.

HOW FOOLISHLY IT HAS BEEN TREATED.

Probably no disease has had more vile concoctions compounded for it, or more violent remedies tried. Every one has his favorite dose, which is always a "sure cure," and yet the horse dies. We have seen half a dozen men prescribe as many different remedies, and all given in less than an hour. Is it any wonder that the horse died?

THE PROPER TREATMENT OF THIS DISEASE.

No disease is more easily cured if properly treated at the commencement, and no one, also, which causes greater agony, or leads to more serious results if neglected or improperly treated. A single dose of the following prescription will cure it at once, if given in time:—

Sulphuric Ether, one fluid ounce;
Laudanum, one fluid ounce;
Water, half a pint.—Mix.

Repeat the above every ten minutes until three doses are given. If no benefit is seen, double the dose in same amount of water, and give every ten minutes until symptoms abate. No medicine is more certain in its effects.

TREATMENT BY INJECTION OF REMEDIES.

In some cases where the above cannot be had, or when the attack lingers, and is very severe, the following injection can be used with good effect:—

Turpentine, four fluid ounces;
Very strong Soap Suds, one quart.—Mix.

Inject through the anus into the bowels with a syringe.

BLISTERING WITH AMMONIA.

If it is a severe case, four ounces of ammonia should be mixed with a pint and a half of water, and a folded cloth large enough to cover the belly and sides of the abdomen, should be wet in it and placed above a folded blanket, and held up close to the under side of the belly to blister

HOW TO BLISTER IN SEVERE CASES.

it slightly. Our engraving shows how this is to be done. Great care should be taken not to blister deeply. It may do its work in ten minutes or it may take half an hour. It should be closely watched, as it is a powerful agent. Blankets wrung out in hot water may be substituted, changing often so as to keep up the heat. If the above measures do not bring relief, you have a case beyond simple colic, and the pulse must be watched to see if inflammation of the bowels has not commenced. On getting over an attack, the food should be soft and light until the horse is entirely well. Bran mashes should be avoided. No bleeding or physicing is needed here.

FLATULENT OR WIND COLIC.

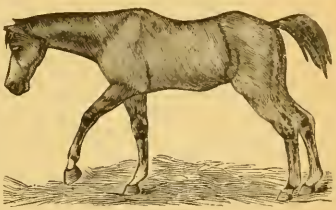
WHAT IT IS AND ITS CAUSES.

An attack of flatulent colic is not uncommon among workhorses, and horse-owners should always be prepared by having proper remedies ready to be administered when necessary, as these attacks often prove fatal from improper treatment. This disease is brought on from various causes; among the most common are imprudent feeding, both as to quantity and quality — either feeding too much a meal, or feeding damaged provender; watering too soon, either before or immediately after feeding; exhausting the animal by overworking, etc. This disease is the result of acute indigestion. The food, instead of undergoing the normal process of digestion, ferments, and gas is given off in large quantities, which so distends the stomach and bowels as to threaten immediate death from suffocation or rupture of the stomach.

THE FIRST STAGE OF FLATULENT COLIC.

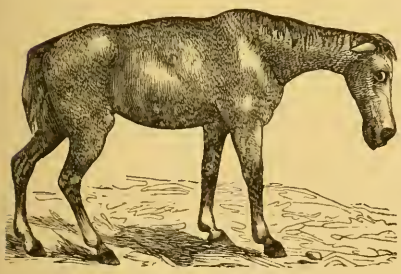
The horse will exhibit symptoms of uneasiness after feeding, hanging its head, fidgeting, and rocking the body by resting first on one foot and then on the other. Its breath is labored and oppressed. These symptoms occur before the abdomen begins to swell. When

the body begins to enlarge, the horse commences to paw, but in a much more leisurely manner than in spasmodic colic. The pain is not so severe, being oppression from a distended stomach. He seems sleepy and stupid, with a heavy, dull pulse. The horse gradually becomes worse as the disease lingers, but its progress is not as rapid as spasmodic colic. It may be a day or two growing worse and worse. There is a certain amount of delirium and vertigo, the muscles of the lips twitch uneasily, and the muscle which moves the skin is occasionally acted upon as if the animal were troubled with flies, vermin, etc. When it occurs while another disease is in progress, or while the animal is becoming convalescent, the probability is the animal will not survive it.



FIRST SYMPTOMS OF FLATULENT COLIC.

ITS LATTER AND FATAL STAGES.



A BAD CASE OF FLATULENT COLIC.

The horse will stand in the same place, the pulse becomes feeble and the breathing fast. The abdomen becomes greatly enlarged, the pupil of the eye dilated, and often sight is lost. If the horse is loose, he will walk around and around, running against obstacles. Delirium may be present and the horse may neigh weakly. The hair stares and is ragged, and copious and partial perspiration breaks forth on parts of the body. The pulse at the jaw is lost, and the heart indistinctly beats. At last the limbs fail, the body falls to the ground, and with a few struggles the animal dies.

WHAT SHOULD BE DONE FOR IT.

If it be caused by green food, it is more serious. In ordinary cases it is easy to cure if the right thing is done at once. People generally insist upon doing just what ought not to be done, and not only add to the trouble, but lose valuable time. If the horse has been "doped" (a very appropriate term) for bots, so much the worse.

The first thing to do, is to stop the formation of gas by neutralizing the secretions, and to stimulate the system as well as to lull the pain. To do this, give the following at one dose:—

Chlorate of Potash, one ounce;
Sulphuric Ether, two fluid ounces
Water, one pint.—Mix.

Dissolve the chlorate of potash in the water, and then add the ether. Two tablespoonfuls of common baking soda may be substituted for the chlorate of potash, if necessary. If no relief is obtained in an hour, give the following dose:—

Sulphuric Ether, two fluid ounces;
Spirits of Camphor, half a fluid ounce;
Laudanum, two fluid ounces;
Carbonate of Ammonia, one drachm;
Water, one pint.—Mix.

Repeat in an hour if no benefit is seen. The carbonate of ammonia may be omitted if not at hand, yet it materially adds to the stimulating power of the prescription.

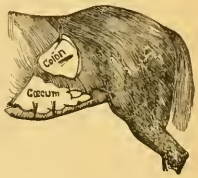
It is a common practice to compel horses suffering from this disease to take violent exercise, which, to say the least, is not only cruel, but very imprudent, often endangering the life of the animal. Walking exercise is always proper, particularly if the animal is inclined to throw himself violently on the ground, but in no case should the sick animal be urged faster than a walk. If the case grows more serious, a piece of brimstone or sulphur may be burned in the stable, impregnating the air with its fumes until it is difficult for man to breathe. This may be continued for two hours, and the former remedies again used in their turn.

HOW TO RELIEVE BY AN EASY OPERATION.

Should the abdomen continue to enlarge and fatal signs appear, an operation, often successful, should be tried rather than lose the horse. It can be done by anyone of ordinary skill and judgment.

TROCHAR TO RELIEVE COLIC BY PUNCTURE.

We have given an illustration of the instrument, as well as of the places where it should be inserted in the body, which will make it plain to all. By tapping on the left side of the body, at the points designated, a hollow sound will be heard. Draw the skin a little one side, and with a sharp pointed knife, make an incision through the skin over the spot. Force the trochar through this hole into the bowels, and withdrawing the sharp pointed part of the instrument, the gas will rapidly escape through the tube. A probe may be used to clear the tube if its mouth becomes stopped. Withdraw the tube after the gas has escaped. It is rarely necessary to repeat the operation. If it should be so, select a new place. A home-made apparatus may be improvised, by having a small tube and a long, sharp, small-bladed knife. Insert the knife and follow with the tube. No food or water should be given during the attack.



PLACES TO PUNCTURE OR INSERT TROCHAR.

TREATMENT DURING RECOVERY FROM AN ATTACK.

This is important also. Soft food, consisting of scalded oats, etc., may be given as the horse gets better, and gradually working up to usual food. Measures must be taken to strengthen and tone up the stomach. For this purpose give the following ball twice a day:—

Sulphate of Copper, half a drachm;
Extract Belladonna, half a drachm;
Extract Gentian, half a drachm;
Powdered Quassia to make a pill mass.

All balls should be freshly prepared, and no more than six prepared at any one time, as they dry up and lose their effectiveness in a certain degree.

ENTERITIS.—INFLAMMATION OF THE INTESTINES.

SERIOUS CHARACTER OF THE DISEASE.

This is an inflammation of the intestines of the horse. After death the bowels are found to be black and swollen, and often approach a green color. They are highly charged with inflamed blood, and their structure destroyed. It is a very fatal disease, and measures must be taken in its first stages to succeed. Colic often ends in enteritis, and one may be mistaken for the other. It is often fatal in eight hours.

WHAT CAUSES ITS ATTACKS.

There is no one cause for it. Old horses are most liable to it. What in one horse would cause pleurisy, would in another produce enteritis. Any long and continued exposure and subsequent injudicious feeding, may cause it. Constipation is frequently its origin.

ITS FIRST SIGN AND WARNING.

SIGN OF INTESTINAL IRRITATION.

The first sign of any trouble or pain in the abdomen is shown by the nose and upper lip forcibly turned up, as shown in the illustration. This symptom is not entirely confined to this particular disease, yet it is always a fore runner of some abdominal irritation. A slight attack resembling colic may follow this symptom.

HOW TO TELL ENTERITIS FROM SPASMODIC COLIC.

The horse will roll, plunge, and kick, but with less abandon than in colic. The breathing in colic at the commencement, is deep, full, and natural, except that it is quickened by the exertion. In inflammation of the bowels, the breathing is done by the expansion of the ribs, as the movement of the diaphragm causes intense pain, consequently it is short and quick. In spasmodic colic the mouth is moist and natural, while in enteritis the mouth is hot and dry. The pulse is natural until colic progresses, when it gets wiry; while in enteritis

it is hard and wiry before the disorder is fully developed. The pulse resembles a fine metallic wire striking the finger ends gently about seventy times per minute. Pressure on the bowels seems to ease the pain, while in this disease, the horse cannot bear to have the abdomen touched. This last symptom is not always present, yet pressure on the abdomen in enteritis never affords relief, and will often call forth the most active remonstrance from the heels and teeth. Care must be taken in applying this test as shown by the engraving.

TEST FOR INFLAMMATION OF INTESTINES.

CERTAINTY OF TESTS USUALLY APPLIED.

All these symptoms will not warrant a certain decision regarding the disease, yet they show a very strong evidence of enteritis. There is, however, a sure and

AN INFALLIBLE TEST, UNDER ALL CIRCUMSTANCES.

Roll up the shirt sleeves and have the right arm well soaped or greased. With the left hand raise the tail, standing in the position shown in the engraving, as near the feet as possible. Bring the ends of the fingers together, place them upon the centre of the anus, and maintain a gentle, equal pressure, until the muscle yields and the hand gradually enters the body. The fœces which may be in this part of the bowels, must be brought back and out with the hand. If inflammation of the bowels be present, these will be hard, dry, dark lumps, very offensive and streaked with mucus. Grease or soap the arm again, and advance it into the body as far as possible. If but a gentle warmth exists, there is no inflammation there. If on the contrary, there be a high degree of heat, it is certainly a case of enteritis. This is the only sure test, and no false delicacy or squeamishness must stand in the way of performing it. The life of a

A CERTAIN TEST FOR INFLAMMATION OF INTESTINES.

valuable horse is at stake, and it is always best to know what the disease is before giving medicine, if you wish success. Always have some one hold up the fore foot on the side you are standing, while making the test.

PRELIMINARY TREATMENT OF THE DISEASE.

Take away all food and bandage the legs, which will be cold. Blanket the horse and give plenty of bedding. If the disease is merely suspected, and not tested, the treatment for spasmodic colic will aid in checking it and do no harm.

WHAT THE ACTIVE TREATMENT SHOULD BE.

When it is certainly determined by any of the tests given, no time must be lost. Physic is poison in this disease, and must not be given. A particular kiud of bleeding is allowed, which will be described. Take away a quart of blood and inject into the vein a pint of blood-warm water. A profuse physicing will follow, as well as sweating, almost immediately. Care must be taken that no air be injected into the vein. To prevent this, use a quart syringe, with a curved fine point, to inject the pint of water, and have a place marked on the handle to show how far to push it in. The injection of water will lower the pulse and abate the fever. If the pulse again becomes high and feverish, give the following dose every twenty minutes, till pain and fever abate:—

Tincture of Aconite, twenty drops;
Sulphuric Ether, three fluid ounces;
Laudanum, two fluid ounces.
Extract Belladonna, one drachm.

HOW TO APPLY AMMONIACAL BLISTERS.

Rub the belladonna up in a pint of water, and then mix in the other ingredients. As the pulse grows more natural leave out the aconite. As the pain subsides, drop out the belladonna. Lengthen the intervals now to thirty minutes between drinks, and gradually reduce the dose as the horse grows better.

Should the symptoms denote a dull lingering pain, which refuses to yield, apply the ammoniacal blister, as recommended for spasmodic colic. Its action must be watched closely.

TREATMENT DURING RECOVERY.

After the disease has been checked, yet the cure not complete, the following dose should be sprinkled on the horse's tongue every two hours: —

Calomel, half a drachm;
Opium, one drachm.—Mix.

Stop all other medicines as soon as the symptoms will permit. There is no reason why medicine should be continued after its purpose has been accomplished. The food given during recovery has much to do with the cure of the disease. Bran in any shape is irritating to the intestines. Hay tea, or flour gruel, made by adding a pint of flour to a pail of boiling water and given cool, is the only food which should be allowed during the early stage of recovery. Boiled and mashed roots may soon be added, then crushed and scalded oats, gradually working back to regular food, which should be dampened for some weeks. Good care and common sense will aid the medicines. It is just as important that a horse should be well cared for in this disease as a sick person.

ACUTE DYSENTERY.

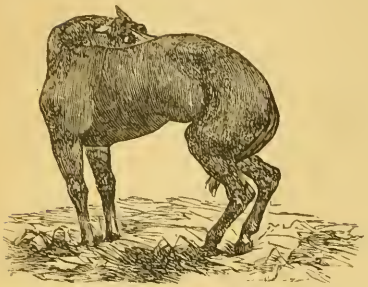
ITS CAUSES AND CHARACTER OF THE DISEASE.

It is generally caused by some poisonous matter taken into the stomach. Often aloes, croton oil, and other drastic purgatives (which are given merely because some people have an idea a horse must be physiced about so often), create an inflammation of the mucous membrane, which ends in severe dysentery.

WHAT ITS PROMINENT SYMPTOMS ARE.

The first symptoms will resemble spasmodic colic, but the violent dysentery which follows, soon indicates the disease. The discharges

soon become mere discolored water, with a most offensive smell. The thirst is excessive, and the pulse, which at first is hard, shortly becomes thick and feeble, while the heart alternately skips its beats. The position of the body denotes abdominal pain, while perspiration breaks forth on different parts of the body. The abdomen or belly becomes distended or bloated, and death soon follows.



A HORSE WITH ACUTE DYSENTERY.

JUST WHAT TO DO FOR IT.

It is of no use to inquire what has done it. The first thing to be done is to stop the discharges and allay the pain. The following will be the best prescription which can be given in cases of this character:—

Sulphuric Ether, one fluid ounce;
Laudanum, three fluid ounces;
Liquor Potassa, half a fluid ounce;
Powdered Chalk, one ounce;
Tincture Catechu, one fluid ounce.—Mix.

Give every fifteen minutes during the acute stage. If it is inconvenient to get the liquor potassa and the chalk, a tablespoonful of baking soda will be a good substitute. If the catechu is not to be easily obtained, a strong decoction of the inner bark of the white oak may be used in its stead. Inject into the bowels every twenty minutes, by syringe, a quart of starch water, containing an ounce of laudanum.

When the alarming symptoms cease, is the time that particular care be taken to lead to final recovery.

THE FINAL TREATMENT TO ASSIST RECOVERY.

If no alarming symptoms show, the medicine may be reduced gradually in number of doses, to three times daily. Do not be

needlessly alarmed if the bowels are constipated for two weeks after such an emptying. At the end of two weeks, stop all medicine and pay attention to food. It should be entirely liquid for the first two weeks, gradually working up to soft food, and avoiding bran mashes. Much depends upon this part of the treatment.

DYSENTERY OR SCOURS IN COLTS.

This disease has the same peculiarities of dysentery in older horses yet proceeds from other causes, such as neglected condition of dam, etc. In all treatment, care should be taken not to check the discharge too suddenly, or it will subject the colt to fever and finally death. Many are lost every year in this way. The best remedy is a home-made one, as follows: —

Inner Bark White Oak, a handful;
Boiling Water, one quart.

Let stand till cold. An ounce of laudanum may be added with good effect. Give half a teacupful every night and morning, and increase or make stronger as needed.

DROPSY OF THE ABDOMEN.

GENERAL CHARACTER OF THIS DISEASE.

This disease generally attacks aged horses, and is the result of chronic inflammation of the peritoneum, a tough white membrane which lines the abdomen, and lies in folds around the bowels. After the inflammation has been present some time, a fluid is secreted which fills the cavity of the abdomen and finally causes death.

DIRECTIONS HOW TO RECOGNIZE IT.

The pulse is hard and small, and beats about sixty times per minute. The head droops, and the food is scattered and spoiled rather than eaten. The nasal membrane is pale and the mouth dry. Pressure upon the abdomen brings forth a groan, and turning in the stall always causes a grunt. The symptoms that the water has

begun to fill the cavity, are a constant lying down and remaining in one position for a long period, accompanied by thirst and loss of appetite. By placing the ear to the abdomen, and having a person slap the opposite side, you can detect the presence of the water. The belly will be baggy and the horse constipated and hide-bound. The hair of the tail drops out, and finally the horse dies.

THE BEST TREATMENT FOR IT.

The only success depends on arresting the disease before the effusion of water. No work should be allowed, and the food should be small in bulk and nutritious. A diet of ground oats and wheat bran entirely, will aid a cure.

The following tonic and alterative ball should be given night and morning: —

Strychnine, one quarter grain;
Iodide of Iron, half a drachm;
Extract Belladonna, one scruple;
Extract Gentian and Powdered Quassia sufficient to make a stiff pill mass.

Increase the strychnine every two days until a grain is given at a dose. Also increase the iodide of iron in the same manner, until a drachm and a half is given at each dose. The abdomen should be blistered by small blisters, which should be repeated as they begin to heal. A mild ammoniacal blister may be given. The treatment is always tedious.

ABDOMINAL INJURIES.

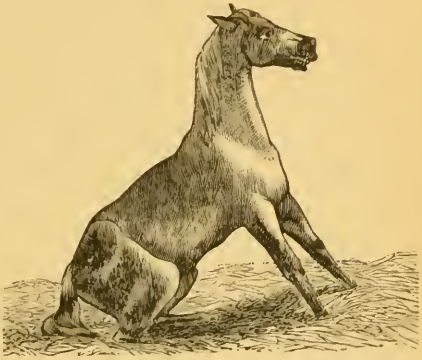
WHAT THESE ARE.

They consist of ruptured diaphragm, ruptured stomach, and ruptured spleen. Also, strangulation, intro-susception, and rupture of the intestines.

SIGNS OF A RUPTURED DIAPHRAGM.

This is attended with a soft cough, and symptoms of heaves, together with a sitting on the haunches like a dog. This is fatal for

the bowels work through the rupture, strangulate, and the horse dies. In some cases the horse rests on his knees with the haunches elevated.



SIGN OF ABDOMINAL INJURY.

TEST FOR RUPTURED SPLEEN OR LIVER.

The symptoms are the same in both diseases, and the only infallible test is to raise the horse's head high up with the hand, when the horse will show signs of falling down. No treatment will cure.

RUPTURED STOMACH.

These symptoms are similar to a bad case of colic, followed by great enlargement of the abdomen. No treatment will avail.

INTRO-SUSCEPTION OF INTESTINES.

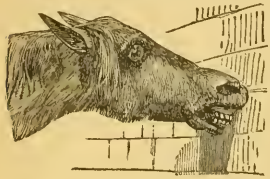
This is the telescoping of one part into another, followed by a contraction, which stops all passages. It has all the symptoms of severe colic. No internal remedies will relieve. The only method is to give chloroform until the horse is insensible, when there will be a chance of the parts relaxing, and relief follow.

WORMS.

HOW THEY HURT COLTS.

These parasites do more injury to colts than to older horses, preventing a vigorous growth, as well as altering the shape of the body. The colt grows up with a large head, a low crest, is pot-bellied and spindle-legged. If it be a male, it often cannot be castrated until the fourth year. The appetite is ravenous but the colt remains

thin. The manure is coated with slime, and evidently is not well digested. The anus projects, and the hair is rough and staring. The breath smells bad, and the animal rubs his nose violently against the wall, as shown in the engraving, as well as throws the nose upwards. The eye is unnaturally bright. The colt often picks the hair off his legs in mouthfuls.



A SURE INDICATION OF WORMS.

WHAT TO DO TO KILL THEM.

The tape worm is the worst but rarest. Its signs will be joints found in the manure. Nothing is so effectual as turpentine, which should be given in doses proportioned to the age of the horse, as follows: —

For a foal, two teaspoonsful;
Three months old, one tablespoonful;
Six months old, two tablespoonsful;
A yearling, three tablespoonsful.

Increase by two tablespoonsful for every year older, until four years is reached. To give the turpentine, beat it up with the yolk of two eggs, and give in half a pint of water, before the colt has had food in the morning. In two hours give from a gill to a pint of oil, according to age of horse, as a physic.

FOR INTESTINAL WORMS.

These are the large, long worms which infest the bowels. The following dose will "fetch them" away: —

Pulverized Aloes, one drachm;
Calomel, sixty grains;
Tartar Emetic, thirty grains.

Mix and give in a pint of warm water.

FOR THREAD OR PIN WORMS.

These infest the bowels near the anus, and cause annoying itching, often causing the horse to rub the hair off around the tail. The following is a sure cure, and easy to prepare: —

Water, one quart;
Salt, all that will dissolve in it.

Inject this strong salt water into the rectum with a syringe. A strong decoction of quassia is an excellent remedy, or a pint of sweet oil; two ounces of turpentine may be injected. Medicines by mouth lose their virtue before they reach these pests.

FOR POSTERIOR IRRITATION.

Sometimes the horse will be annoyed by an itching just within the anus, and will, in spite of all efforts, rub the hair off his stern, and speedily becomes rat-tailed. This can easily be stopped if it proceeds from worms, by treating them. As it sometimes proceeds from irritation of the rectum, we give the following excellent recipe, which will stop this trouble: —

Glycerine, one half ounce;
Spermaceti, one ounce.

Melt the spermaceti and mix the glycerine. Now add

Mercurial Ointment, three drachms;
Pulverized Gum Camphor, three drachms.

Insert a small portion of the above with the finger, into and beyond the anus, night and morning.

CONSTITUTIONAL TREATMENT TO PREVENT WORMS.

After remedies have been given to relieve a horse from the presence of worms, tonics must be given to bring the horse up to a higher bodily condition. For this purpose there is nothing better than the following: —

Powdered Golden Seal, three ounces;
Powdered Gentian, three ounces;
Powdered Ginger, two ounces.—Mix.

Divide into thirty papers, and give one night and morning. Give the best of food and plenty of attention and care.

CHAPTER VIII.

ACCIDENTS AND DISEASES OF THE LIMBS.

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KNEE SPRUNG AND COCKED ANKLES.—Description of these troubles—How to mitigate them—Dividing the tendons for—Firing the joints—More particulars.

BONE SPAVIN.

WHAT IT IS AND WHERE LOCATED.

Few people have a correct knowledge of the true character of bone spavin. Certainly they show this lack of information by the manner and means they take to treat this disease, and the vast amount of humbuggery connected with the recipes sold for this purpose. We shall try and make this subject so plain that even a boy can understand it, and give the very best remedies which science has discovered, and how and when to use them.

EXTERNAL APPEARANCE OF A SPAVIN.

Bone spavin is a gradual changing of the cartilages and associated membranes of part of the complicated hock joint into porous bone, uniting generally some of the several small bones which form the joint. The head of the shank bone may also be involved, in fact is, in many cases. It may extend farther upward and involve the main part of the joint.

WHERE IT ORIGINATES AND HOW IT COMMENCES.

The inflammation which always precedes this change into bone, originates in the interior or cellular portion of the bones. In consequence of this inflammation a watery secretion is thrown out between the bone and the tough membrane covering it, which finally results in ossification of the affected part, causing lameness and stiffness. It may affect only one small bone, or it may increase and involve the whole structure and unite the parts in one solid mass. The external size does not determine its serious character. It depends more on location, for a small spavin is often more serious, and causes greater lameness, than a much larger one differently situated. Any bony growth, however small, which can be seen or felt on the inside of the hock joint, is a spavin. It may be in any stage of development, from the simple inflammation accompanied by slight lameness, tenderness, and heat of the part, to the incurable bony lump easily seen by a novice. We give two illustrations, one showing the external appearance of a bone spavin, and the other the appearance of the same after it has been dissected, showing how it affects the joint. This is a severe case, and many do not show so distinct externally, and are correspondingly hard to detect.

APPEARANCE OF SAME SPAVIN DISSECTED.

HORSES MOST SUBJECT TO IT.

There is no doubt but what it is in a measure hereditary—that a colt from a spavined mare by a spavined horse, will be much more likely to become spavined. This, in some degree, is also the result of the shape of the hock which they inherit, for sickle- or cow-hocked horses are more subject to it.

HOW IT INJURES A HORSE.

If it is situated high up on the hock, it may be incurable before it is discovered, as the union of the bones and stiffness of the joint appears before any exterior enlargement. Its bony enlargement at this point often irritates the tendons that play over it, and the horse is lame in consequence. When low down on the hock it gives little, if any trouble, and is not so serious, as many times the joint is but little affected. In fact, we have known horses so affected never to be lame a day, or show that it lessened their usefulness.

WHAT THE CAUSES OF SPAVIN ARE.

It may be caused by hard, severe work of a young horse; by driving fast over rough roads; by anything which strains the limbs and produces inflammation near the joint. Severe track work of trotters or racers in their younger days, will often develop it.

HOW TO DETECT A SPAVIN IN ALL ITS STAGES.

This is not always an easy task to do, even by an expert, but we have given a few tests below, which, if followed, will certainly show it, if present.

THE TROTTING TEST.

NATURAL ACTION OF LEG IN TROTTING.

A sound horse lifts his foot clear of the ground, and by an involuntary motion of the hock joint the hoof is inclined outward. The affection of the joint in spavin prevents the easy, natural bending of the leg, and as the horse is trotted past you, betrays a faulty action of the leg, and prevents a side view of the hoof. Our illustrations plainly show the difference between the sound and unsound limb in trotting.

SPAVINED LEG IN TROTTING.

THE SHOE AND HOOF TEST.

The stiff joint prevents the foot clearing the ground, and the hoof has a blunted and worn appearance, while the shoe is worn in front to sharpness. Lift the hoof and look at the shoe.

TEST BY ACTION OF THE LEGS.

On coming first from the stable a spavined horse will be stiff, and often limp. Have him taken by the head and whirled short round and round as quickly as possible, both ways, and observe closely how he handles his hind legs. If he is the least stiff he will show it and often drop a little on the affected side. If you have suspicions that the horse has been warmed up, have him returned to the stable and try him again in an hour. Observe if he seems to travel stiffly on his toe at first.

HOW JOCKEYS DODGE THIS TEST.

Exercise soon limbers up the stiff joint to such an extent that a horse which started lame, in a short time will go without a limp. We have known jockeys to warm up a horse by driving moderately before showing, and also to limber up the joints by moderately hot fomentations, and then rubbing dry, which has the same effect.

GENERAL INSPECTION AND TEST BY THE EYE.

View the horse from at least four different standpoints as shown by our illustration. First, from behind; second, from in front, but

WHERE TO STAND WHILE LOOKING FOR SPAVIN.

far enough from the horse so that you can view the hocks through between the fore legs by stooping a little; then from near each fore leg. Enlarge and diminish the distance you are from the horse in each of these positions; also to the right or left; in fact, get as many points of view as possible, always comparing one hock with the other — the slightest difference may prove a spavin, and be serious according to location and stage of growth. It is most to be feared in young horses, as no one can limit by years its growth. In old horses it has been known to almost disappear externally, yet the serious affection of a stiff joint will always remain.

A SURE AND CERTAIN TEST FOR SPAVIN.

Stand close to the side of the hind foot, face backwards, place the hand that is next the horse on and above the hock joint behind, as shown by our engraving; lean your weight on this hand, while you bend over and behind the horse's leg and examine the hock on the inside from above and behind, leaving your other hand free to examine and press the inside of the hock with thumb and finger, to detect any tender spot, bony enlargement, inflammation or heat. Many horses will flinch at having their hocks thus examined, but do not mistake this for tenderness. See if there is not some particular spot that is tender and hot, with a slight enlargement. It is always best to have some person hold up the fore leg of the horse on the side you are examining, to avoid danger. This examination must not be hasty or rough.

THOROUGH TEST FOR SPAVIN.

WHAT CAN BE DONE FOR SPAVIN.

If the horse is not lame, and the lump does not increase, better not try any active treatment, or it may bring on increased action and prove more serious. If it is situated high up, and a bony deposit already taken place, the joint is incurably affected. You may burn, blister, punch, or even chisel the bunch off, but you can never restore the delicate membranes and cartilages which have become bone, to their former state. The bunch may often be removed so that, to all appearance of the eye, the horse is sound unless tested for it.

THE MOST SUCCESSFUL MODE OF CURING IT.

On the first appearance of the inflammation which produces the spavin, certain means can be adopted which will produce a cure. It generally takes about three weeks for a spavin to develop, and the spot to become tender to pressure, and in a short time after, the spavin will be apparent to an experienced eye. During these weeks is the time to treat it, for this is the curable stage, and the destruction of the joint avoided. The first step is good food and perfect

rest in the stable, with no driving of any kind. The next step is to reduce inflammation. This can be done by keeping the joint wrapped with a few thicknesses of cloth, or a sponge applied, and kept wet with water, or the following lotion: —

Sugar of Lead, two ounces;
Acetic Acid, four ounces;
Water, one quart.—Mix.

As soon as the inflammation has gone, apply a portion of the following blister, made as follows, and repeat it two or three times as may be necessary, at intervals of two or three weeks. When the parts have recovered from the effects of blistering, a run at pasture for six or eight weeks will be very desirable treatment: —

Biniodide of Mercury, two drachms;
Powdered Cantharides, one drachm;
Fresh Lard, two ounces.—Mix.

The above should be thoroughly rubbed in, as its object is to stimulate absorption of the spavin. It will check all further growth, and render any increase in size impossible. Give internally, for three months, one drachm of iodide of potassium in a mash, daily.

A WARNING ABOUT TREATING SPAVINS.

It will be well for owners of horses to remember that the bunch that shows on the inside of the hock, is merely the outward symptom of the disease, while the real seat of the trouble is deep within, and the taking off the bunch in an old case, will not cure the spavin, but may make a bad matter worse. Firing or actual cautery is an excellent method of treatment, but it takes good judgment and experience to do it properly. We give an article on how to fire properly, in another part of this work, which can be consulted.

ARTICULAR OR OCCULT SPAVIN.

HOW IT DIFFERS FROM BONE SPAVIN.

Occult spavin is an ulceration which destroys the delicate and smooth surfaces of the small bones that form part of the hock joint. It is so called because it shows no external enlargement, and the severest pressure on the hock does not cause the horse to shrink from tenderness and betray it. It is a deep-seated, hidden ailment of the hock joint.

ITS ORIGIN AND CAUSE.

Some authors say that it is caused by the bones being injured by a sudden and severe shock; some claim that it first commences with the rupture of the membrane that lines the joint; but nothing can be determined certainly as to its origin; it is more important to know

HOW TO DISTINGUISH IT.

The horse suddenly becomes lame, and no examination of foot or leg can locate the injury, and yet the horse is severely lame; there is no heat or inflammation present, no pressure indicates where the trouble lies; and sometimes we conclude we have a case of occult spavin, for the reason that we certainly have no other affection. A peculiarity of the trot may be noticed—the foot hardly touches the ground before it is snatched up again, energetically and higher, as shown by our illustration. The foot is carried in direct line as in bone spavin. These symptoms may not be so prominent as to attract attention, except by a critical examination. The horse is very lame one day and better the next. It is improved by rest, but worse by work, and from this fitful and varying tendency, cannot be depended on, and is generally lame when wanted most.

EXTERNAL ACTION OF THE LEG IN OCCULT SPAVIN.

WHAT CAN BE DONE FOR IT.

As two rough, ulcerated surfaces of a joint grating upon each other at every step must be very painful, our only hope is in uniting the small bones of the hock into one immovable mass by a bony

deposit, for we can never restore the delicate surfaces of the joint. By this method we leave the main joint of the hock free, and do not affect the limb beyond a certain stiffness, which is not serious, while the horse may prove highly useful for years. It may take twelve months to do it, and in some cases it is impossible. Three months is generally sufficient.

HOW TO CURE IT BY TREATMENT.

Swing the horse up in a sling high enough to just take his weight off the limb, and apply the following liniment with considerable friction every two days: —

Soap Liniment, eight fluid ounces;
Liquor Ammonia, one fluid ounce;
Tincture Cantharides, one fluid ounce;
Laudanum, one fluid ounce.—Mix.

Wrap the joint loosely with flannel, confined with elastic webbing above and below the hock. The above treatment will promote a bony deposit, and hasten the union of the ulcerated surfaces. Feed liberally, but not heavily. Improvement will be shown by the horse bearing weight on the limb, yet he must be kept in the sling for three months after this first sign of improvement, and even after he, of his own accord, has done away with the aid of it, for no disease is more liable to relapse. Even after he is well, it is best to avoid putting to heavy work. Give no purgatives, but use bran mashes to loosen bowels.

BOG SPAVIN.

DESCRIPTION OF ITS CHARACTER.

APPEARANCE OF BOG SPAVIN.

This is an increase of the synovia, or, as some call it, "joint oil," in the upper or chief part of the joint of the hock, beyond the usual amount. It is situated upon the upper, forward, and inner part of the hock. This increase of synovia, which lubricates the joint, causes the membrane to bulge or puff out.

CAUSES OF BOG SPAVIN GENERALLY.

It is produced by repeated shocks, and its character resembles windgalls, and is produced by like causes. It is liable to take on changes which may terminate in a bony deposit. It is thought lightly of by horsemen, yet its location makes it serious, from fears of something worse to follow. It does not lame, generally.

ONLY TREATMENT OF BOG SPAVIN.

Continued pressure applied to the part is a successful method of treating it. Fold a piece of soft rag several times; wet it and apply to its surface the following: —

Opium, one drachm;
Gum Camphor, one drachm.—Mix.

HOW TO BANDAGE FOR BOG SPAVIN.

Now apply this to the surface of the spavin, and over it place a piece of cork large enough to completely cover the enlargement, and fasten all on by elastic webbing drawn tight enough to keep up a constant and equal pressure on the surface of the spavin. Let this bandage with its dressing be the last thing taken off as the horse goes from the stable, and the first thing put on, on his return. If the treatment seems to cause irritation, let up for a day or two, and keep the part constantly wet and re-commence again. Iodide of potassium, internally, in drachm doses, daily, will aid the treatment. In some cases, by a careful operation, it can be reduced by the use of hypodermic syringe withdrawing the excess of fluid.

SPLINTS.

WHAT THEY ARE AND WHERE LOCATED.

Many horsemen think lightly of splints, yet they are serious according to location. Thousands of horses have them and do not seem to be affected. They are bony tumors whose stages of development are similar to bone spavin, which they resemble except in

LOCATION OF SPLINTS.

location. They generally occur on the inside of the fore leg or outside of the hind leg. They often unite the splint bones to the shank bones. We give illustrations of the different locations where they have been known to form. Figures 1, 2 and 3 show their external appearance on the shank bone. We give an illustration of one on the head of the shank bone on inside of the knee, which is serious, on account of location near knee joint.

SERIOUS SPLINT ON KNEE JOINT.

WHAT THEIR EFFECTS ARE.

SPLINTS DISSECTED.

If the splint be of ragged, spinous growth, and situated where a tendon plays over it, as shown by our illustration, the horse will be lame during its growth, from irritation. Sometimes nature cures by covering the bony growth with cartilage or membrane. Others that are serious are those on the inside of the leg, high up, which are in danger of being grazed by the opposite hoof. The horse has been known to drop as if shot, by the intense pain given by the blow of the hoof.

HOW TO DETECT THEM IN DIFFERENT STAGES.

It is very easy to detect a full sized splint, but more difficult to discover one while forming; at this period they are the most painful. You can judge of their serious character by their location. It is always best to examine those parts where they would prove serious. The horse may be lame, and yet the cause supposed to be something else than splint. Stand by the side of the horse, and grasp the rear part of the shank bone, running the fingers down the inside and the thumb the outside, in the grove formed by the shank and the two splint bones behind it. In this manner you will notice any enlargement, however small, or feel any heat. If on pressure where any inflammation be detected, the foot be snatched up, you have struck the location of a splint. If on examination all round, nothing can be detected, have the horse trotted gently to and from you, as horses

with splints, when lame, generally turn the leg outward when trotting to relieve the limb. Observe, also, if the leg is fully bent or advanced while walking.

THE BEST TREATMENT FOR SPLINT.

If no lameness is present, let it alone. To relieve the pain and inflammation, apply cloths wet with the following lotion constantly:

Acetate of Lead, two fluid ounces;
Acetic Acid, four fluid ounces;
Water, one quart.—Mix.

After inflammation has subsided, very excellent results have been often produced by repeated blistering and absolute rest. The following is an excellent blister: —

Biniodide of Mercury, one drachm;
Lard, one ounce.—Mix.

Another excellent remedy is to paint it with tincture of iodine once a day, and give a drachm of iodide of potash in his feed daily for two months. When the tincture of iodine creates tenderness, temporarily discontinue, and commence again.

RINGBONE.

WHAT IT IS AND ITS DIFFERENT EFFECTS.

Ringbone, splint and bone spavin all resemble each other in character, being a bony deposit or enlargement, differing only in location. The disease may affect the large pastern bone, the small pastern bone, the lower pastern joint, the joint between the small pastern and bone of the foot, or any two or all of them. It may entirely lock the joint, making it immovable; it may extend almost entirely around the part, or merely be a small enlargement in front. Sometimes the rear portions of the joint only are affected, the front being free. When the sides only are affected, it is not so serious. Ringbone, which affects the small pastern and coffin bone, is the most

RINGBONE AFFECTING TWO JOINTS.

difficult to treat. Its size is no criterion as to the amount of lameness. The enlargement is not the disease, but an effort of nature to strengthen a part naturally weak, or that has been injured by working the animal before the bones are matured. It will thus be seen that it is of serious or minor importance, according to location, size, etc. We give an illustration of a case which involves all the bones. The joint at figure 1 is still capable of some motion, but the coffin joint at figure 2 is immovably locked.

MANY CAUSES OF RINGBONE.

It is a peculiarity of ligaments, membranes, etc., on or near any joint, when injured and inflamed, that they are liable to produce an ossification or formation of spongy bone, which attaches itself immovably to the bone or joint proper. A severe strain inflames the joint, inflammation ensues, and lymph is secreted. This is gradually changed into porous bone, and a ringbone is the consequence. There is no doubt but what it is inherited to a certain extent. That is, the colts of a ringboned sire are very sure to become ringboned at an early age. We know of one breeder of fancy trotting stock who made a complete failure from the fact that his colts, sired by a speedy yet ringboned stallion, all became more or less ringboned at an early age and were valueless.

THE PROPER AND BEST TREATMENT OF IT.

The first thing to do in the commencement of a ringbone, is to allay the inflammation and prevent any further secretion of lymph in the part. Apply cloths to the surface, which must be kept constantly wet with the following lotion: —

Sugar of Lead, two fluid ounces;
Acetic Acid, four fluid ounces;
Water, one quart.— Mix.

After the inflammation and pain has subsided, apply on and around the margins of the ringbone, with smart friction, some of the following blister: —

Biniodide of Mercury, two drachms;
Lard, four table spoonsfuls.— Mix.

As soon as the blister subsides, apply again. Continue the treatment for two weeks after all the acute symptoms have disappeared—allowing the horse to rest. Be careful and not put the horse to work for several months, but give a run in a damp pasture.

WINDGALLS.

WHAT THEY ARE AND WHERE LOCATED.

These are especially the marks of hard usage. They do not impede the motion, or lame the horse. The back sinews of the horse are encased in a fine membranous sheath, which secretes a fluid which facilitates the motion of the tendons one upon another. This fluid is synovia. From irritation by too severe work, or too fast a pace, this natural secretion is increased beyond the capacity of the sheath, and it bags out, and is distended in those parts which are the weakest, forming windgalls. Two such parts are just above the fetlock, and one below it, as shown by our illustration. They generally appear on the hind legs.

LOCATION OF WINDGALLS.

ARE THEY SERIOUS AND INJURIOUS?

While they are generally considered of little account by most horsemen, and do not rate a horse as unsound, yet we have known them to disappear on horses after a hard race of several heats, and in their place a puffy and swollen condition of the tendons. When this has taken place, the sheath of the tendon has suffered severe irritation. A day or two of rest and ease will relieve this condition. A continuation of this irritation changes the synovia into a turbid and often blood-charged fluid; the wall of the membrane thickens; the windgall becomes harder, and in some instances has been known to turn into porous bone. During this period the horse will become quite lame.

HOW TO CURE THEM BY PRESSURE.

The cure is not always an easy task. One remedy, is continual pressure. Apply a rag folded several times and wet, on which has been spread the following mixture: —

Powdered Opium, one drachm;
Gum Camphor, one drachm.— Mix.

Over this place a piece of cork, half an inch thick, and the full size of the windgall, and confine all over the windgall with an elastic rubber bandage. If it could be made so as to lace on, it would be better. It must be the first thing put on when the horse returns to the stable, and the last thing taken off on his going out. They can be reduced by introducing a hypodermic syringe and withdrawing the surplus fluid, and applying the above lotion until all inflammation has gone. If any bunch remains, paint it daily with tincture of iodine. Stop if irritation takes place, and commence again.

THOROUGHPIN.

WHAT IT IS AND WHERE LOCATED.

APPEARANCE OF A THOROUGHPIN.

Thoroughpin is a name given to a bursal enlargement, which occurs at the upper and back part of the hock, beneath the great tendon. Generally both sides participate in the swelling, but occasionally it happens that one side only is involved. Of this there are two kinds, namely, those arising from inflammation of the true hock joint, and those caused by wrench or sprain of the tendon above referred to. When irritation of the true hock joint is the cause, then the thoroughpin is but a further development of bog spavin. The increased secretion of synovia consequent upon the irritation, first makes its appearance in the most dependent portion of the synoval bursa, which it causes to become unusually distended. When the distension reaches to the superior portions of the bursa,

then the swelling appears equally on both sides, and moderate external pressure forces the fluid from side to side. This is the origin of the name thoroughpin, or "through and through." But the most common description of it is that arising from irritation of the flexor pedis tendon.

JUST HOW TO TREAT IT.

The treatment is the same as for windgalls, yet with some precautions. If it is associated with bog spavin, treat the thoroughpin first, and after cured, do not omit to still keep on the cork and rag, while you are subjecting the spavin to pressure, or you will see it return.

Respecting the treatment of bursal enlargements generally, it depends considerably on the cause, for if they be due to concussion, hard work, and such like causes, then they can be only temporarily got rid of, but if due to sprain or wrench of a ligament or tendon, they are not equally likely to reappear. No matter to what cause they owe their origin, the animal must get rest, the irritation and inflammation must be allayed. Bathe with tepid water, and apply considerable hand-rubbing to dissipate the secreted fluid. Apply a sharp blister, and when it has had its effect, bandage. After having put on two or three rounds of it, lay a piece of cork, the size of the enlargement and about half an inch thick, upon the thoroughpin at both sides, that is, the inner and outer sides of the hock, and over these an elastic bandage. This will throw an unequal but desirable pressure upon the enlargements. Both laxatives and diuretics are indicated, the fluid being to a greater or less extent excreted. A drachm of iodide of potassium in a mash daily will assist the treatment. Very frequently lameness which is attributed to bog spavin or thoroughpin, is in reality due to bone spavin, which has been overlooked, or to sprain of the tendon.

WASTING OF THE MUSCLES—SWEENEY.

WHAT THE DISEASE REALLY IS.

Sweeney is a wasting or perishing of the muscles, technically known as atrophy. It is more frequently located in the shoulder and hip than any other part of the body, and is commonly the result of strain, contusion, or laceration of muscular tissue. We must also bear in mind that a very common cause of atrophy is disease of the feet, in which case the muscles of the shoulder perish from want of sufficient exercise to keep them in a natural state of development, and the only rational method of treatment in such cases is first to restore the feet to a normal condition.

WHAT THE TREATMENT SHOULD BE.

The best method is to stimulate the part by applying, two or three times a day, some of the following liniment:—

Gum Camphor, three ounces;
Tincture Cantharides, three fluid ounces;
Tincture Capsicum, one fluid ounce;
Alcohol, one pint.—Mix.

Give the animal gentle exercise daily, and apply smart friction to the part daily.

SPRAINS OF THE TENDONS.

APPEARANCE OF A SPRAIN.

WHAT THEY ARE.

The horse is liable to have the tendons, or sinews of both fore and hind legs badly sprained from severe exertion, fast heats or reckless driving. They have different names for sprains, according to the degree of injury and location, but the treatment is the same for all, and can be given under one head.

GENERAL SYMPTOMS OF SPRAINS.

When it first occurs, it is hardly noticed unless it happens to be very severe. The next morning, how-

ever, the horse will be stiff and cramped, which may disappear on exercise, to return the next morning. If more severe, the horse will keep the leg bent and only rest the toe on the ground. By a careful examination of the leg a few hours after the injury, a small swelling may be detected, which is hot or enlarges in proportion to the amount of the injury. If it is slight in character, it can be determined by pressure only, as sound tendon is not at all tender, and will bear almost any amount of pressure.

DIRECTIONS HOW TO TREAT SPRAINS.

HIGH-HEELED SHOE FOR SPRAINS.

First, put on a shoe made gradually thick from toe to heel, the latter made an inch higher than the former (no caulks); then have the leg placed in a pail of tepid water, and allowed to remain there for an hour. Repeat this three times daily until the inflammation has entirely disappeared. While you are waiting for the disappearance of the inflammation, have the leg bandaged from knee to fetlock during the intervals between each bathing, the bandage being saturated in a solution of: —

Acetic Acid, two fluid ounces;
Opium, two ounces;
Chloroform, two fluid ounces;
Water, one quart.— Mix.

When the fever has entirely left, apply a blister to the whole tendon from knee to fetlock. Before doing so, clip off the hair. The blister may be composed of powdered cantharides, iodine and Venice turpentine, of each one drachm; and palm oil, two ounces. About half an ounce of this will be sufficient. It will scarcely be necessary to repeat. We would advise a couple of months' rest.

CURB.

WHAT ITS CHARACTERISTICS ARE.

It consists of an enlargement, or a gradual bulging out of the rear part of the hock, which is caused by an injury to the tendon of that part. It is easily detected.

ITS TREATMENT, AND HOW TO SHOE.

A LARGE CURB.

If the curb has recently appeared, have the heel of the shoe made a little thicker than those in ordinary use. Fomentations should be applied, with a view of reducing the inflammation, and afterwards hand-rubbing may be employed, in order to promote the action of the absorbents of the parts, and stimulate them to remove swelling. It is never advisable to resort to any severe treatment in the first instance; but if the lameness recurs, as is occasionally the case when the animal is put to work, it will be advisable to apply a blister to the part, which may be prepared as follows: —

Biniodide of Mercury, one drachm;
Fresh Lard, four tablespoonsful.—Mix.

Apply every night until a watery discharge exudes through the pores of the skin; foment twice a day with warm water; continue bathing for two weeks. When a young horse throws out a curb, absolute and long-continued rest are imperatively demanded; in an old horse, such is not the case, unless to a limited extent. Do not work the horse for four or five months, at least. The high-heeled shoe should be kept on for some time after the animal recovers from the lameness, and when any change is made it must be done very gradually; otherwise the animal will be liable to renew the injury.

RHEUMATISM.

DESCRIPTION AND CHARACTER OF THIS COMPLAINT.

This ailment is supposed to be due to a specific condition of the blood; it is generally accompanied by fever, stiffness, and lameness; the inflammation and pain are both of a wandering character, being now in one joint, and immediately afterwards found in another; but it has this peculiarity, that it generally leaves one joint to appear in the corresponding one on the opposite side. Thus, should it be to-day in the off knee, you will find it to-morrow in the nigh knee—not in the fetlock or hip—for, as a rule, when a joint has been affected and the pain ceases, the opposite corresponding joint is most apt to suffer. The symptoms of the disease are sudden and inexplicable lameness, which may or may not be accompanied by inflammation. Should there be swelling it is almost sure to appear in the stifle, fetlock, hock joints, or in the loins, but it not unfrequently involves the tendons of the forward limbs; the loins or chest may be its seat also. It would be well to remark that a general stiffness, listlessness and uneasiness are mostly exhibited before the disease appears in a pronounced form. The pulse is hard and unyielding; the mouth, as might be expected, is devoid of moisture and very warm. In the chronic form the above symptoms are apparent, but modified, and the fever may be entirely absent; the lameness does not shift or move about so much in the chronic as in the acute, but it is much more persistent, and leads to ulceration of articular cartilage. Occasionally the acute form becomes chronic, and an animal subject to the chronic is most likely to be frequently a victim to attacks of the acute. In the chronic form the bones are subject to many changes in their shape, structure, and constituents. Bony tumors may grow on the pelvis or spinal column, also on the fringes of the synoval membranes; the joints may become locked, solidified, or anchylosed from rheumatism, and we may also have, as a result of the disease, ossification of the walls of the heart, which is extremely dangerous. The pulse becomes intermittent, jerky, and wiry; the

heart's action sharp and angry; the cardiac impulse is often wanting, and a to-and-fro motion usually accompanies the heart's movements.

DIRECTIONS HOW TO TREAT IT.

The horse should, if possible, be put in a sling, in a box stall, and raised enough to take the weight off his limbs. At commencement of treatment, steam if possible, so as to charge the room with hot vapor. Wipe dry with cloths, blanket and put on hood. Apply the following liniment, well rubbed in on the affected parts: —

Compound Soap Liniment, sixteen fluid ounces;
Liquor Ammonia, two fluid ounces;
Tincture Cantharides, two fluid ounces;
Tincture Opium, two fluid ounces.—Mix.

Bandage each leg with warm flannel bandages, clear up to the body, and secure them by elastic webbing. Give internally the following ball: —

Powdered Colchicum, two drachms;
Iodide Potassium, one drachm;
Mix into pill mass with molasses.

Repeat steaming, applying liniment and above pill every morning until horse is better; then, if the liniment has not blistered the joints, apply with a brush the following blister, and then return to former liniment: —

Tincture Cantharides, one fluid ounce;
Camphorated Oil, one-half fluid ounce;
Tincture Opium, one-half fluid ounce.—Mix.

Give bran mashes twice a week, and green food once a day; crushed oats or soaked corn also, if the horse is losing spirit.

CAPPED KNEE.

CAPPED KNEE.

Is of same character as bog spavin on the hind leg, except that this is located on knee joint of fore leg. It is not generally considered serious, but will ultimately lame a horse, and in bad cases, if let alone, will burst. The best method of healing it, is to have the fluid drawn off by the

use of a hypodermic syringe, and afterwards reduce any inflammation by cooling lotions. Then paint daily with tincture of iodine; when irritation follows, suspend the application, then apply again. Pressure will succeed in some cases, but unless the horse can remain at rest, it generally aggravates the matter. It is liable to the same changes that windgalls, etc., are.

CAPPED HOCK.

SEVERE CAPPED HOCK.

Capped hock is generally the result of some injury. Horses of a nervous, vicious disposition, will kick on the slightest provocation. They will kick against the whiffletree while in harness, and against the stall posts in the stable, and in this way they frequently bruise the point of the hock, causing heat, swelling, and lameness more or less, and constituting what is known as capped hock.

HOW IT SHOULD BE TREATED.

Take one pound of sal-ammoniac and dissolve it in three pints of vinegar, and bathe the injured limb every one or two hours. If the swelling does not entirely disappear in one week, the cap may be blistered with biniodide of mercury and lard, one part of the former to eight parts of the latter, or the tincture of iodine may be applied to the enlargement morning and evening with a toothbrush until the parts are slightly blistered. The application may then be discontinued for a few days.

CAPPED ELBOW—SHOE BOIL.

This disease is located on the elbow of the front leg, and is caused by the pressure of the shoe against the part while the horse is lying down. It is always best to prevent it, which can be done by

placing leather boots on the fore feet. If it is of recent occurrence and the part inflamed, reduce the inflammation by the use of cold water or evaporating lotions. If it has broke, syringe the boil out three or four times daily with the following: —

Carbolic Acid, one ounce;
Tincture Opium, four fluid ounces;
Soft Water, one quart.—Mix.

If any callous remains after healing, or after the inflammation has been subdued, apply a blister of biniodide of mercury and lard.

LYMPHANGITIS—SWELLED LEGS.

WHAT THIS DISEASE IS.

This is a disease which is commonly known as water farcy, but in most modern veterinary works is named lymphangitis (inflammation of the lymphatics). This affection resembles erysipelas in the human being. Inflammation of the lymphatics is usually confined to one hind leg. The swollen glands are very painful when pressed upon, and the swelling extends downward from them—first, as a narrow elevation upon the inside of the thigh, but now extending in every direction, it involves the whole circumference of the limbs, from the glands first inflamed, down to the foot. As the swelling increases the pain and lameness subsides. Horses that have once been attacked with lymphangitis are liable to a recurrence of the disease, and generally one attack succeeds another periodically, until the limb assumes an enlarged dropsical condition. The exciting cause of lymphangitis is overfeeding—more particularly when the animal is not called upon to perform his ordinary labor. A certain proportion of cases probably depend on constitutional or hereditary predisposition.

HOW TO TREAT IT.

Commence by giving one drachm iodide of potassium three times a day, and apply with friction some of the following liniment over the whole limb, three times daily: —

Gum Camphor, three ounces;
Tincture Aconite, two fluid ounces;
Tincture Arnica, four fluid ounces;
Alcohol, one pint.—Mix.

Particular attention must be paid to the food and care, which is of great assistance in this disease.

KNEE SPRUNG.

Knee sprung is occasioned from tendonous contraction. The animal, in order to ease the contracted tendons, flexes the knee joint, the angle being proportioned to the amount of contraction existing; hence, when there is much defect in the tendons, the animal goes over sufficiently to make the gait unsteady, and frequently "trembling" is observed. Blistering, bathing, etc., have only temporary effect, as with work the symptoms above described are repeated; therefore, by slightly raising the heels, not sufficiently to increase the deformity, but high enough to permit the animal to have a solid foundation to stand upon, and not straining the defective tendons, prevents the trembling mentioned, besides considerably mitigating the unsightly appearance of an animal balancing himself on his toes, which latter habit would ultimately change the conformation of the hoof. Often when it is extreme, a surgical operation which divides the tendons is the only mode of relief.

KNUCKLING, OR COCKED ANKLES.

In a great majority of cases the tendency to cocked ankles is an indication of local weakness which involves a constitutional predisposition, which may be in existence, but remains latent until some unexpected cause may determine its development, such as a heavy load, fast work on an uneven surface, injudicious shoeing, etc. Avoidance of such causes, as far as possible, would naturally suggest itself, but where the weakness is well defined, and knuckling over occurs, the best and only remedy is to apply a good, sharp blister, and immediately afterwards fire the joint. Boots, bandages, and such artificial auxiliaries have very little beneficial effect.

CHAPTER IX.

ACCIDENTS AND DISEASES OF THE FEET.

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ACUTE AND CHRONIC LAMINITIS—FOUNDER.—Its location, character and causes—How it often changes the foot—Distinction between acute and chronic cases—Other peculiar causes of it—How to examine and test for it—Importance of instantaneous treatment—The best treatment—Treatment of chronic cases—The shoeing.

NAVICULAR DISEASE—CONTRACTED FEET.—Where the real seat of the disease is—Its worst results—Its main causes—How people make mistakes—Treating the wrong disease—Symptoms always present—The sure signs—Peculiarity of the trot—Pointing with the toe—How to commence the treatment—How to modify it—Special directions for special cases—Cautions and warnings.

PUMICE FOOT.—Its description—Horses most liable to it—Its causes—What can be done for it—The mode of shoeing—Hoof compound to use for it—To alter the character and quality of the hoof.

SAND CRACKS—TOE AND QUARTER CRACKS AND FALSE QUARTER.—What they are, and their extent—Causes—Proper treatment—Cutting the crack—Removing proud flesh—Firing for it—The best hoof dressing for it—To shoe properly.

CORNS—BRUISE OF THE SOLE.—Causes of these troubles—Old corns and new corns—Certain evidence of corns—Suppurating corns—To treat the various kinds—What to do for bruise of sole or pricking the foot.

QUITTOR.—Location inside the hoof—Its character and severity—The correct treatment—To cut open the sinus—To probe—To apply remedies.

THRUSH AND CANKER.—Where they both originate—How they differ—Which is the worst—The different treatment of each—What is necessary to be successful.

SEEDY TOE—WOUNDS FROM TREAD OR OVER-REACH.—Origin of seedy toe—Operation for it—Succeeding treatment—Treatment of wounds from over-reach

OSSIFICATION OF LATERAL CARTILAGES, OR "SIDE BONES."—How to test for them—Their causes—Their results—Their treatment.

TO LOCATE LAMENESS.

HOW IT AFFECTS A HORSE.

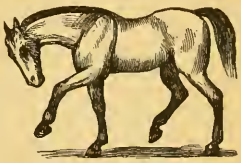
When the fore feet or fore limbs are affected, it does not seem to damage the constitution of a horse so seriously as when some hind member is crippled. What every man wants to know is, where the trouble lies, what the real matter is, how serious it will prove, and how to cure it. This we will endeavor to show plainly.

HOW TO EXAMINE AND LOCATE IT.

In the majority of cases of lameness of the fore extremities, we more frequently find the difficulty located in the foot than in any other part of the limb. The foot of the horse is a very complicated structure, and liable to various diseases from a variety of causes. In all cases of obscure lameness the owner should have a

rigid examination made of the foot. The shoes should be removed, the hoof pared and properly searched, so as to ascertain, if possible, the probable cause and nature of the disease. Horses are sometimes lame from corns, pricks from shoeing, or accidental puncture, inflammation of the laminæ in the acute, sub-acute, and chronic stages, ossification of the lateral cartilages, and many other diseases of the foot.

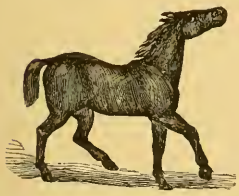
HOW TO DETECT IN THE FORE FEET.



LAMENESS NEAR FORE FOOT.

One fore foot being injured, the head and body drop or slightly sink, whenever the sound member touches the earth. It is because the horse wishes to favor the sore foot or limb, and scarcely touches the earth with it, before he snatches it up again, bringing the sound foot to the ground with an emphatic sound, throwing his whole weight upon it.

HOW TO DETECT IN HIND FEET.



LAME IN NEAR HIND FOOT.

The movements of the head and body will not be so much affected by the hind feet, but if closely observed the head will be slightly raised when the sound hind foot touches the ground. The movements of the haunches generally show its location more plainly. As the sound limb touches the ground, the hind portion of the body drops on that side, while on the lame side the haunch is jerked upwards as the lame foot is snatched from the ground. When the lameness is in one of the hind limbs — the hock joint, from its complicated structure, will be found the probable seat of the disease. The first thing to be done in all cases of recent lameness is to have the foot properly searched; ascertain if the hoof is unusually hot; do the arteries throb; is there any swelling or tenderness; next examine the back tendons by carefully manipulating the limb.

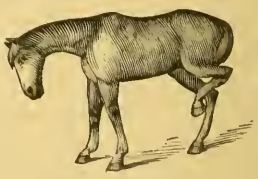
HOW TO DETECT IN SHOULDER.

Occasionally the shoulder joint is ulcerated, but seldom. The trouble generally lies in a muscle arising at the shoulder joint. In this case the horse refuses to advance, or bend the leg at the shoulder joint or elbow, drags the limb and never lifts the toe from the ground. An old homespun test was to lead a horse up to a log, and if he refused to pass over it — the shoulders was the spot. The symptoms for lameness in both shoulders are, alternate resting of the feet backwards, not pointing forward; a very sensible stiffness, especially in attempting to turn around, rigidity of the muscles, etc.

LAME IN LEFT SHOULDER.

TO EXAMINE THE HIP JOINT.

This joint sometimes suffers from ulceration, and the symptoms resemble occult spavin, with the addition, that the diseased limb is caught up from the ground more sharply when the hip is ulcerated. The best method to test, is to place some soft substance over the joint and rap it sharply with a mallet, when if ulceration is present, a sharp response may be looked for. It is incurable and the horse worthless.



LAME IN NEAR HIP JOINT.

TO EXAMINE KNEE JOINT.

Any disease which affects this joint, which cannot be detected from the outside, will show itself in a stiffened advance of the fore leg, a long step, or when the horse lies down, will be observed to place the limb on the outside of the body, not under it, and not closely bent. Besides these symptoms, the horse may show no signs of lameness.

SPECIAL DIRECTIONS IN DETECTING LAMENESS.

Besides the above instructions for examining the different parts for location of lameness, if it be not yet determined, a more critical

and thorough examination must be had. Examine the feet for diseases described in this chapter, next, the coffin joint, and so on up to and including the shoulder. In ninety-nine cases out of a hundred you will find the trouble before you reach the shoulder or hip.

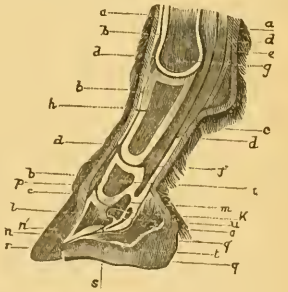
A HORSE'S FOOT—HOW TO CARE FOR IT.

THE FOOLISH TREATMENT IT RECEIVES.

When the foot is gone there is no horse left. There is an old adage to this effect, the truth of which is incontrovertible. Yet no part of a horse's anatomy is worse used than the foot, and there are no more frequent diseases to which the notice of the veterinary surgeon is brought than those of the feet. This comes of the unwise yet obstinately maintained fashion of cutting, burning, tarring, and greasing the hoofs.

COMPLETE EXPLANATION OF THE FOOT.

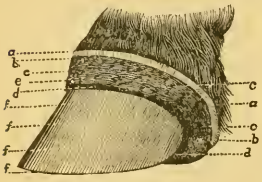
We give an illustration of the internal construction of the foot of a horse in its natural state. The bone of the foot, or coffin bone *l*, is the foundation of the foot, and is the nucleus around which the hoof is moulded, and which it resembles in shape. It is crescent shaped, the horns extending backward, from which arise cartilages on each side called side bones. The horny frog is at *q q*, while the sensitive membrane of the frog and sole is at *t*. At *o* we have the plantar cushion, or as farriers call it the "fatty" portion of the frog, which fills the rear portion of the hoof between the wings of the coffin bone, and being in intimate connection with the lateral cartilages, forms an elastic cushion which protects, as well as supports, the flexor tendon of the foot *d*, which



DISSECTION OF FOOT.

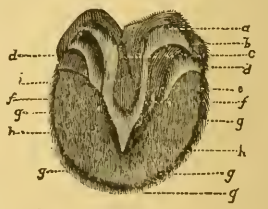
passes down to the rear, and under the navicular bone, *k*, and is inserted into the sole of the coffin bone *s*. At *u* we have the location of navicular disease on the rear face of the navicular bone. The ligaments which connect the naivcular bone with the deep flexor tendon are shown at *m*. The hard wall of the hoof is at *r*, while *n*,*n*, are respectively the sensitive and horny laminæ dovetailing into each other. At *c* we have coronary cushion, which fits into a concavity in the inner, upper edge of the wall of the hoof. Besides acting as a cushion, it performs the important office of secreting the substance which forms the hoof. The navicular bone *k* is a narrow bone placed across between the wings of the coffin bone, and is intended to throw the flexor tendon of the foot farther from the center of motion, and thus increase its power. By observing how intimately it is connected with the other parts of the foot, and the bend of the tendon where it passes over its face, we can readily see the serious nature of navicular disease. The large pastern bone is marked *h*, and the small pastern bone *i*, while *g* is the shank bone.

THE FOOT WITHOUT THE HOOF.



THE FOOT INSIDE THE HOOF.

We give another illustration of the foot divested of the hoof, showing how the hoof grows and how it is attached to the foot proper. The coronary frog band is shown at *a*, *b* is the coronary fissure, both are continuous around the top of the hoof. The coronary cushion which secretes the growth of horn is at *c*, and also extends around the foot at the top of the hoof. At *f*, *f*, *f*, we have sensitive laminæ, which stand up from the coffin bone like the fine leaves on the under side of the mushroom. They number between six and seven hundred, and cover the surface of the coffin bone above, below and a certain distance within the wings. These laminæ dovetail with horny laminæ on the



THE SOLE DIVESTED OF HOOF.

inside of the hoof, thus suspending, as it were, the coffin bone within the hoof. Each leaf terminates in pointed villi, as fine as the smoothest velvet, and from one-eighth to one-fourth of an inch long. At *g, g, g, g,* we show the termination of these villi, and their immense numbers, while at *h* we show the sole covered in same manner. The branches of the sensitive frog are at *f, f,* while *d* shows how far the sensitive laminæ extend around the wing of the coffin bone. The cleft of the frog is at *c,* while *b* is the rear portion and extension of the coronary cushion, and *a* bulbs of the heels.

THE BOTTOM OF THE FOOT.

NATURAL FOOT OF FIVE-YEAR-OLD HORSE.

We also give an illustration of the sole of the left fore foot of a five-year-old horse that had never been shod. At *a, a,* we find the heels of the frog, and *b* is the cleft. The branches of the frog are *c, c,* while *d, d* are the heels or "angles of reflection" of the wall of the hoof. The division between the frog and the bars is at *e,* while *f, f* are the bars or inflection of the hoof. The body of the frog is marked *g*. The outside quarter of the foot is at *h*, while the inside quarter is marked *i*. The point of the frog is *j*, while all in front and around it is the sole *k*. There is a seam or fissure at the junction of the sole with the wall of the hoof which is shown at *l. l,* while *m* is the wall of the hoof, and *o* the toe of the foot.

THE IMPORTANCE OF UNDERSTANDING THE FOOT.

By reading our brief description of the construction of the foot, it will be seen what a delicate, yet admirably contrived member it is to fulfill its office. Very little success will be had in treating the diseases of the foot, unless some understanding be had of its nature and construction. In addition to our illustrations, we will give an explanation of the characters and nature of the hoof and frog.

THE CONSTITUENT PARTS OF THE HOOF.

Horn is a fibrous substance which contains twenty-five per cent. of water. The fact that it contains water in its normal composition is a very important one. When horn is deprived of water it becomes dry, hard, and without elasticity, precisely like a piece of dry glue, which breaks and splinters into glassy fragments. It is necessary, therefore, that this water should be retained, to keep the horn in good condition. The common practices of burning the sole to procure a fit for the shoe, or rasping the outer surface to get a good shape, and of tarring and greasing the hoof, all tend to drive the water out of the horn, and not only to harden and contract it, but to make it brittle. In this condition its usefulness as a protection for the foot is at once impaired and partly destroyed. When the sole is burned by contact with a hot shoe it is obvious that the water in the portion of the horn that is heated must be driven off.

WHAT RASPING, TARRING AND BURNING DOES.

When the smooth, polished, hard surface of the horn is rasped away the softer inner fibrous portion is exposed to all the evil influences of evaporation and disintegration, and the numberless pores and cells or interstices of the horn are enabled to give up the water they contain. The horn in this case is also made dry and brittle, and, of course, contracts. Tar contains an acid and a volatile oil, which evaporates and leaves a hardened, pitchy mass. When tar is applied to a hoof the acid acts chemically upon the horn, and hardens or disintegrates it, and the oil, evaporating, leaves a space between the fibres filled with hardened residue. It operates precisely in the same manner as when it is applied to leather — as a sole of a shoe, for instance — as a preservative; the leather in a few days becoming hard and unyielding, impervious to moisture and dry. As with tar, so with grease; both these substances drive out the water from the horn and occupy its place, in time hardening and acidifying the substance of hoof crust, rendering it brittle and contracting it.

STRUCTURE OF THE FROG AND HOW TO TREAT THE FOOT.

The substance of the frog is horn, but it is of a softer and more open texture than the sole and crust of the hoof. It is, therefore, more easily affected by injurious conditions, and when it becomes deprived of its water it shrinks more than the more solid horn. From this explanation of the character of the horny covering of the foot any reasonable horse-owner may learn how to treat the hoof, and how to avoid injuring it. When a shoe is to be fitted, the edge or wall sole should be prepared by cutting or rasping, and not by burning. Indeed, the shoe should be fitted to the foot, and not the foot fitted to the shoe. When, from bad management, the sole and frog have become dry and contracted, no grease or tar should be used; but water should be used freely, and then the hoof should be dressed with glycerine, which will mix with water, and does not displace it. Glycerine contains no acid or acrid qualities, but it is soft, bland, emollient, and does not evaporate. It therefore softens the horn, and allows the fibres to expand. Contraction is thus prevented or overcome when it has actually occurred.

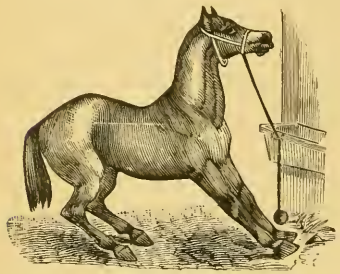
THE TREATMENT OF ITS INJURIES BY HOT WATER.

In all recent injuries of the foot, accompanied with inflammatory symptoms, we have every confidence in the warm bath. Place the foot in a pailful of warm water for at least one hour every morning and evening, adding a little hot water as often as may be necessary, so as to keep the bath at a proper temperature. When the foot is removed from the bath, place it in a warm poultice, or apply a flannel bandage, whichever mode of treatment may be most applicable to the case.

ACUTE AND CHRONIC LAMINITIS—FOUNDER.

ITS LOCATION, CHARACTER AND CAUSES.

This disease is almost invariably confined to the fore feet, but still we sometimes find the hind ones also implicated. This inflammation is primarily limited to the sensitive laminæ and sole, the bone of the foot being, of course, involved from the commencement.



APPEARANCE OF HORSE DURING ATTACK OF LAMINITIS.

It is generally originated by over-exertion, the animal being permitted to feed too heavily after having been deprived of food for several hours longer than usual. He therefore eats more than can be digested. Driving at a fast gait for several miles, will also cause the disease. Chilling an animal is productive of it also, it being comparatively of little consequence under what circumstances the chill occurs. It is frequently one of the sequels to inflammation of the lungs or bowels; it also arises from inflammation of the mucous membrane of the bronchial tubes, in either of which cases the body and feet may be both implicated. In cases such as above enumerated, the hair of both mane and tail may be cast off, which gives us a rather clear intimation that the tendency is also to cast off the hoof, but its attachments being much more tenacious, it is not so readily accomplished. When the disease is occasioned by concussion it is more serious, as inflammation of the bone of an acute character is most likely.

CHANGES WHICH MAY OCCUR IN THIS DISEASE.

The changes which occur are about as follows: There is inflammation of the sensitive foot—laminæ, sole, and coffin bone. The point of the hoof internally becomes most vascular; the exudation is naturally thrown out here in greater quantities than in the other

portions of the hoof. This is said to cause most excruciating and protracted pain. The hoof being of an unyielding character, there is no provision made for the reception of the exudation. When laminitis is due to causes other than concussion, the exudate extends no further than the external surface of the sensitive laminæ; but when due to concussion it is thrown out underneath the periosteum, then inflammation of the bone is almost sure to follow. The free circulation of the blood is thus impeded. Hence you have sloughing and necrosis. After a slight attack of laminitis has passed off without causing any structural change, the exudation which has been caused, being slight, is soon absorbed without any structural change having occured. When the disease is severe, the exudation increases in thickness, and naturally increases the pressure on the toe of the coffin bone in one direction, and the opposing surface of the crust in the opposite, and to a certain extent separates both, forcing the coffin bone downward, and the toe of the hoof upward, as shown by our illustration. The diseased hoof now becomes disfigured by the horizontal lines or ridges. The structure of the hoof now becomes brittle, and readily chips off. This is followed by ossification of the sensitive laminæ, and therefore by suppuration of the coronary substance. This causes detachments of small portions of the hoof where it is joined by the hair. Sometimes a fluid collects between the sensitive and horny soles and the frogs, and forces them apart.

HOW IT OFTEN CHANGES THE FOOT.

DISTINCTIONS BETWEEN ACUTE AND CHRONIC CASES.

When laminitis is due to causes other than direct concussion, we are of opinion it is then due to sympathetic irritation. The inflammation extends from the original location of disease to the feet. Acute laminitis ends in resolution, or in sub-acute or chronic. This latter is that condition of the feet after the subsidence of the febroid symptoms, or it may originate independently of an acute attack. Animals suffering from the chronic form are subject to the acute,

from very trivial causes; and, in fact, when an animal has once had laminitis of anything bordering on a chronic or severe type, it need be no matter of surprise should they frequently afterwards become victims to a repetition of the disease, and often without any apparently sufficient provocation to induce it.

OTHER CAUSES OF LAMINITIS.

Concussion, over-exertion, indigestion, and irritation of the intestinal canal, imperfect shoeing, tight nailing, the use of calks and liberal application of the drawing-knife are about the most successful agents in producing the disease which we have at our command, and we are afraid they are called into requisition but too frequently. Sometimes laminitis is due to what would be considered rather a curious circumstance, namely, an animal being lame in one foot throws an unequal proportion of the weight on the opposite, and in this way cause laminitis of the foot which was originally sound. In a case of this kind, if the original lameness was severe, the animal should be slung, as it cannot bear its weight on either of its feet, without experiencing extreme pain, which should be alleviated as much as possible.

DIRECTIONS FOR DISTINGUISHING IT.

Inflammation in both fore feet, excessive stiffness and lameness, which is most apparent at starting, the hind legs are drawn forward under the body, in order to throw as much weight as possible on the hind legs and off the fore. If you wish to find out at once if the animal suffers from laminitis, back him in the stall. You will observe immediately, if he suffers from this disease, that he will try to elevate the toes, in order that the heels may bear the weight; the pulse also is strong, quick, and throbbing; the animal generally lies down with the legs stretched out, the reason for doing which is obvious, namely, to take all the weight off the feet. Having so far described symptoms, it will be scarcely possible to make a false diagnosis, and be it remembered this is a most important point, as many valuable animals are irretrievably ruined from the fact that the owners fail to diagnose

the case at the proper time, the consequence being that a case of acute laminitis which is curable, is converted into one of incurable chronic laminitis.

THE BEST TREATMENT FOR ACUTE LAMINITIS.

Just as soon as possible after having discovered that the animal has been foundered in the feet, or has acute laminitis, which is the same thing, have his shoes taken off, place the feet in a deep tub of warm water, in which some hay has been put to form a soft foundation for the tender feet to rest upon. Keep them there for about an hour and a half, then take them out and put them in warm poultices, composed of either bran and boiled carrots, or, if accessible, equal parts of slippery elm bark and linseed meal. *Be sure the poultice envelopes the whole hoof.* Have a deep soft bed for the animal to stand upon. Give a purgative, which should be about one-half of the ordinary dose, as superpurgation is apt to follow otherwise. If Barbadoes aloes be the agent employed, four drachms will be found sufficient. Give a dose of aconite, say ten drops every twenty minutes, until the animal has been thrown into a profuse perspiration. Cover him with warm, that is, closely-woven, blankets. The poultices should be changed twice a day, and after taking them off, put the feet in water, as above recommended. Continue this line of treatment for at least three or four days. Feed no grain, simply bran mashes, vegetables and hay. When shoeing the animal, see that the shoes are wide-webbed, the hoof surface being convex, still leaving sufficient flat surface for the wall of the hoof to rest comfortably on; but our advice is to refrain from putting on shoes of any kind for ten or fifteen days.

The animal will be benefited by being put to work, other than road work, agricultural being preferred, and if it is a valuable beast, have him turned out on low-land pasture. Should he be stabled, keep damp swabs on the feet while he is housed. This treatment is applicable to either acute or sub-acute, which we have here treated as one disease, and which in fact it is.

TREATMENT OF SUB-ACUTE OR CHRONIC LAMINITIS.

The most we can possibly do is to palliate the disease. If the sole is at all inclined to become convex, have the shoe made correspondingly concave on the hoof surface. Keep on wet swabs while the animal is at rest. Give continually a deep bed. The animal should get slow work only, should never be used for road purposes, as he would give no satisfaction there, but for ordinary agricultural work he can still be made serviceable. Have him regularly shod, never drive him fast, and keep his feet constantly stuffed, and bathe the feet in warm water for an hour every day; dry them well after taking them out, and be always lenient to the animal that has the misfortune to be a victim to chronic laminitis.

NAVICULAR DISEASE—CONTRACTION OF THE FEET.

WHERE THE SEAT OF THE DISEASE IS.

LOCATION OF NAVICULAR DISEASE.

It is always located in the fore feet on the lower surface of the small bone marked *b* in our illustration. This bone is of the sesamoid class, and is more sensitive and more highly organized than the ordinary bones, and therefore is more liable to injury and subsequent ulceration. In more serious and long standing cases the perforans tendon *a*, beneath the bone, is sometimes ruptured, and the bone itself fractured.

THE MAIN CAUSES OF THIS DISEASE.

Allowing an animal to remain standing in the stable for days and perhaps weeks, without exercise, and not unfrequently upon a hard and bedless floor; spasmodic and violent exercise, by which, we mean, driving an animal for a long distance at a fast pace for a day or two, and then allowing him to remain housed; hereditary predisposition, that is, animals whose progeny have weak, small, flat, brittle, and

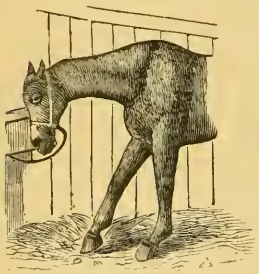
delicate hoofs; improper shoeing, excessive rasping, paring, cutting, and, above all, "opening the heel," which latter is very pernicious, and entirely inexcusable; accidental circumstances, such as pressure from having picked up some foreign substance—such as stone, wood, nails, etc.; leaving on shoes until they become thin, uneven, buried in the hoof, or broken, the natural shape, flexibility, and quality being thus perverted.

HOW THE PEOPLE MAKE MISTAKES.

A great mistake might be just here committed by assigning, as another cause, atrophy, and consequent contraction. Some try to modify it by calling it "pinched on the heels," "slightly tender forward," etc. The reason why it would be incorrect to assign lameness to this is, that contraction is only one of the results of pre-existing disease. The disease occurs from some of the above-mentioned causes, the animal can only use the limb at the expense of being more or less tortured, hence it is invariably kept in a state of repose, unless when the horse is compelled to use it, and as a natural consequence, the parts become wasted, atrophied, and fall in. This same atrophy is almost invariably present where we have well-marked cases of this disease. Suppose an animal is lame in the hoof, and so continues for some months or weeks, by and by the muscles of the shoulder begin to assume a wasted condition. They fall in from want of internal support, as the healthy muscles have been converted into fatty matter, which becomes absorbed. Just as soon as the owner notes this, he, or his veterinary adviser, presuming he does not understand the nature of the disease, says at once, "We have been deceived regarding the seat of this animal's lameness. We have been treating the hoof whereas it is the shoulder which is the seat of disease; it alone is affected." Result: They go to work, treat the shoulder at the expense of the hoof, by neglecting the latter, and what was at one time a disease amenable to treatment, is now one which our utmost skill can do nothing more for than merely alleviate the pain. We can neither restore it to its original condition. nor make the animal other than a crippled sufferer for life.

THE SYMPTOMS ALWAYS PRESENT.

The symptoms are in character alike, whether ulceration has taken place, or whether the disease is in the incipient state; but though the general character of the symptoms resemble each other closely, they are pronounced and intensified in proportion to the inroads the disease has made up to the time of inspection. The degree of lameness varies. Alteration may only just have commenced, or there may be quite perceptible inflammation. In the latter case the lameness will be well marked and unmistakable, while in the former it will be exhibited in merely a little unusual stiffness at first; and if both forward feet are involved a casual observer is very apt to be deceived, and, on account of the peculiarity of gait, attribute the lameness to rheumatism, and allow the golden opportunity to vanish, by waiting for nature to work a cure when she had nothing whatever to do with producing the disease. We may safely lay it down as an axiom that where navicular disease exists the animal will rest that foot on the toe, the heel slightly raised from the ground, with the limb extended; he will do what horsemen call point, as shown in our illustration. It is observed, in connection with the disease, that the fetlock joint becomes peculiarly rounded in front. This is caused by the unnatural position in which the limb is held. The toes are placed firmly on the ground, so as to throw the weight forward as much as possible, and thus relieve the affected part, the heels being permitted to bear as little as possible of the weight, and pointing the toe of the affected foot while at rest; and if both feet should be affected then the toes are pointed forward alternately.

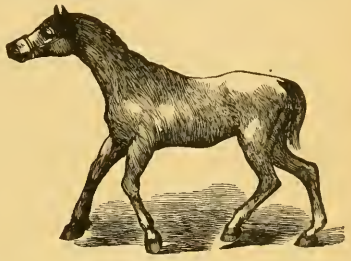


POINTING—A SURE SIGN.

PECULIARITY SHOWN IN THE TROT.

Another symptom which is also invariably present is the manner in which the sufferer strikes his toe or toes into the ground. If you remark it, you will find some horses thus affected travel almost

entirely on their toes. This can be proven beyond doubt by examining a shoe worn by a horse thus diseased and that of a sound-footed animal. Horses such as we are describing usually walk sound, but the moment they are compelled to trot they use their forward limbs as if they did not belong to them, conveying the idea of their being tied together, so short is the space between their steps. Our illustration shows this peculiarity of the trot. When one foot only is the subject of the disease, it will be found to be smaller than its fellow; but this sign should not be relied upon if there is no other evidence of the disease, as sound animals occasionally exhibit a slight difference in the size of hoofs.



PECULIAR TROT IN THE DISEASE.

HOW TO COMMENCE THE TREATMENT.

This, in order to be of permanent benefit, will have to be resorted to without delay. The first symptom being that of inflammation, therefore, before structural alterations have taken place, we should exhaust all our remedial measures if necessary. The shoes should be removed, and it would be well to remember that, when this is being done, unusual carefulness is necessary. They should be removed in as gentle a manner as possible, as the animal is already suffering great pain, which should not be augmented even in the slightest degree. The heels are generally high in animals suffering from navicular arthritis, therefore, after removing the shoes, lower the heels of the hoof, and gradually shorten the toe. Place the feet in warm water for an hour and a half three times a day; as soon as they are taken out of the water, dry them thoroughly, and envelop them in poultices, composed of equal parts linseed meal and slippery elm bark, if it can be procured; if not, Indian or corn meal, and boiled carrots will answer. The poultices should be large, and made to envelop the entire hoof. A great fault is frequently committed by

putting on poultices carelessly, in which case they will either drop off, or are allowed to fall to the bottom of the containing sack, and merely encircle the lower portion of the hoof, where it is of comparatively little value. This treatment — bathing and poulticing — should be kept up for three or four days, changing from hot water bathing to warm poulticing, at least three times daily. He should have a deep bed, in a comfortable box-stall, in order to offer him inducements to take the weight off his feet. Give a purgative immediately on commencing treatment, and during its progress feed only laxative food, vegetables, etc. About two weeks from commencement of treatment, apply a blister to the entire coronet, composed as follows: —

Pulverized Cantharides, one ounce;
Venice Turpentine, three drachms;
Beeswax, two drachms;
Lard, four ounces.—Mix.

Clip off the hair around the coronet and rub in. As soon as irritation has set in stop applying, and as it subsides apply again.

SPECIAL INSTRUCTIONS FOR SPECIAL CASES.

When rest, poulticing, and the usual treatment fail, then the animal may be considered incurable, and must be used for slow work only. Or, if from some peculiarity of the case this is not advisable, then the operation of nerving or neurotomy might be performed. An animal afflicted with navicular disease should be always kept in a box-stall, and a deep, fine bed, and while in the stable, have wet swabs tied around the coronet, which will cover the greater part of the hoof.

The proper kind of shoes to be used on such an animal is one with thick heels, becoming gradually thin toward the toe, the latter being hammered or filed, so as nearly as possible to resemble the shape of the ordinary shoe, when well worn, by a horse suffering from chronic navicular disease. We do not mean to convey the idea that the shoe should be generally thick, only relatively so, that is, thick as compared with the toes.

FARTHER CAUTIONS AND WARNINGS.

Above all do not apply those infernal instruments of torture in the shape of a shoe for mechanically spreading the heels. In this disease contraction is caused by a wasting and shrinking of the interior of the foot and cannot be restored.

PUMICE FOOT.

DESCRIPTION OF THIS DISEASE.

SIDE VIEW OF PUMICE FOOT.

It is a bulging down of the sole of the foot, so that in most cases the horse will walk on the sole instead of the wall of the hoof. Our illustration plainly shows the condition of the bottom of the foot, and also the manner in which the horse walks on it.

CAUSE OF IT, AND HORSES MOST LIABLE TO IT.

SOLE OF A PUMICE FOOT.

Horses with long, slanting, weak pastern, hoofs marked by ringy growths of brittle character, flat sole, well developed and almost invariably large healthy frog, are most liable to it. They generally have a high action, and the force with which they bring down their feet, soon bruises the sole and inflaming the coffin bone, causes it to enlarge and sometimes partly descend, forcing the sole of the foot downward out of its position.

JUST WHAT CAN BE DONE FOR IT.

INTERIOR VIEW OF PUMICE FOOT.

The most success can be had by attending to the shoeing, yet the natural weakness of the feet cannot be changed. A bar shoe should be prepared, the web of which should be covered with leather. the shoe nailed on with double the quantity of nails usually used, but smaller, leaving a bearing on the back part of the shoe

for the frog. The whole hoof should be soaked an hour, twice each day, in a warm bath, and a poultice applied at night, composed as follows: —

Glycerine, four fluid ounces;
Linseed Meal, one quart;
Hot Water, enough to make a thick poultice.

The shoe should be changed and adapted to the foot, as it changes and improves. It may take two or three months to produce any very great changes.

SAND CRACKS—TOE AND QUARTER-CRACKS.

WHAT THEY ARE AND THEIR EXTENT.

The quarter-crack usually occurs on the inside quarters of the fore feet. Fast horses are peculiarly liable to it, if out of condition when trotted. It may extend from the coronet to the lower edge of the hoof; it may extend from the lower edge up but a short distance; it may not reach either edge. It also varies in depth, sometimes only through the hard outer horn, and again deep into the laminæ or quick. Toe-crack is the same, excepting it is on the toe instead of the quarter, and on hind feet mostly.

CAUSES OF SAND CRACKS.

Brittleness of the hoof, either natural, or results of disease or bad management is the main cause. Bad shoeing, by worse blacksmiths, is another source. Narrow heeled shoes, and high calkings are productive of it. Heavy loads drawn on uneven, slippery pavements, severe short heats of the race horse out of condition, and many other thoughtless acts in driving.

PROPER TREATMENT FOR QUARTER-CRACK.

OPERATING FOR PARTIAL QUARTER-CRACK.

Stop all severe work; take a sharp knife and pare off each edge of the crack, until you have made a groove, as shown by our illustration, through the hard horn. If the crack extends from the coronet or

OPERATING FOR COMPLETE QUARTER-CRACK.

top of the hoof, to the bottom, take a firing iron, red hot, draw a line from the coronet on each side down to the crack, forming a V, as shown by the engraving. It should commence at least half an inch from the crack on each side. If the crack only extends part way up, pare out the same and burn straight across the crack at its upper point; if it does not extend to top or bottom, pare out as before, and fire both above and below, as shown by our illustration.

The object of firing is, to just burn through the hard horn, and separate the sound from unsound portion; the firing need not be deep enough to cause pain. Shoe with a bar shoe, and have the hoof dressed off so that that portion which contains the crack, will not bear on the shoe, as shown by our illustration. Place the foot once a day for a hour in a warm bath, then apply a poultice composed as follows:—

Glycerine, four fluid ounces;
Linseed meal, one quart;
Hot Water, to make a thick poultice.

These means will affect a cure if properly attended to, which is not always done. A blister applied to the coronet just above the crack, will stimulate the secretion of horn.

TO CURE THE TOE-CRACK.

The treatment of toe-crack is the same as for quarter-crack, paring out the crack, as shown by our illustration. In some instances granulations may take place. These should be thoroughly cleaned with the following lotion:—

TREATMENT OF TOE-CRACK.

Chloride of Zinc, twenty grains;
Glycerine, four ounces;
Water, eight ounces.—Mix.

Take a sharp knife and at one stroke excise or cut them out. Let the foot down to bleed and reduce the fever in the foot. Keep the part wet with the lotion, and if the crack has been mechanically treated, as directed for quarter-crack, it will soon improve. After the first two days, the lotion need not be applied oftener than three times. In order to more easily pare out

the crack, it may be necessary to heat an iron to a black heat, and apply that to the hoof in the crack, which will soften it by heat. A shoe with two clips, one on each side the crack, will help. If necessary to drive the horse, place some lint wet with the lotion in the crack, bind it in with a wax end, and cover over with cloth securely tied on, and cover all with tar. Cleanse it thoroughly on return. Proper attention to food must be given, if the animal suffers much pain, and is feverish. Bran mashes, scalded oats or soaked corn, if possible, once a day.

FALSE QUARTER.

DESCRIPTION OF THIS WEAKNESS.

It is a partial absence of the outer and harder portion of the hoof, at the quarter, and consequently it is very liable to injuries of many kinds.

WHAT CAN BE DONE FOR IT.

SHOEING FOR FALSE QUARTER.

Generally speaking, it cannot be cured. Sometimes a slight firing and an after poulticing may cause the coronet to secrete the proper horn, but not often. The usual remedy is to dress down the sound part to a thin edge on each side; to put on a bar shoe with clip on toe, and remove the lower edge of the hoof, under the quarter, so it will not bear on the shoe. We have known a piece of gutta percha fastened on the weak spot to protect it, succeeding admirably.

CORNS.

DESCRIPTION OF THESE TROUBLES.

These are at first simple bruises of that part of the sole included between the bars and the wall at the heel, but later there is often an increased production of horn, and the formation of a horny tumor,

which presses injuriously on the quick. In other cases the bruise causes active inflammation and the formation of matter, which if denied escape below, will burrow toward the coronet, or less frequently, around the toe, and give rise to quittor; in other cases the corn is *pared out*, as is supposed, but the heels having lost the mechanical support of the sole, curl forward and inward, repeat the bruise continually, keep up the inflammation and suppuration, and what is equivalent to an open sore in the heel. The irritation often produces absorption of the margin of the bone at the heels, with bony deposits above or below, and ossification of the lateral cartilage, a condition which almost necessarily perpetuates the bruises or corns. Corns may exist in either heel, but are usually in the inner, or weaker one, and prevail, above all, in flat feet, with low weak heels. We give two illustrations of corns.

AN OLD CORN ON FORE FOOT.

NEW CORN ON HIND FOOT.

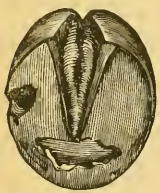
EVIDENCE OF THE PRESENCE OF CORNS.

Lameness, with a tendency to point, with the heel slightly raised, when at rest, and a short, stilty, stumbling step when moved. Pinching the affected heel with pincers, or tapping it with a hammer, causes wincing. If the shoe is removed, and the heel pared out, the horn may be seen to be blood-stained, but unless this is seen on removing the flakes, no one should allow curiosity to lead to a deeper search. If suppuration has taken place, the tenderness is extreme, often causing the animal to keep the foot raised, and scarcely daring to touch the ground with the toe. A tender swelling usually appears at the coronet, above the affected heel, and pinching or hammering of the heel is unendurable. A horny tumor may be recognized by symptoms similar to those seen in quittor.

HOW TO TREAT THE DIFFERENT VARIETIES.

If a recent bruise and uncomplicated, apply either a bar shoe or a common one, but rasp down the bearing surface of the affected heel, to avoid pressure, and place the feet in warm water, or keep the wall moist with swabs, and the sole with oilmeal, wet up with water

and glycerine, equal parts. When the tenderness has subsided, smear the hoof with glycerine, occasionally, and work carefully. Remove the shoe early enough to prevent pressure on that heel, by preserving the elastic horn of the sole between the wall and bar. Never allow this to be pared or weakened, unless it be to evacuate matter or sand, or for the removal of a horny tumor. If suppuration has taken place, pare down the heel until the matter escapes, remove all the horn detached from the quick, and pare the horn around this to a thin edge, poultice until the surface is smooth, dry, and not at all tender, then apply a bar shoe with a leather sole. No pressure should be allowed on this heel until the sole is grown up to its natural level as a support.



BRUISE OF THE SOLE AND PRICK OF THE FOOT.

Bruise of the sole is a similar accident, but more serious, yet should be treated in the same manner. After cutting out bruised parts to allow discharge of any matter found, the wound should be kept wet with the following lotion:—

Chlorde ot Zinc, one scruple;
Water, half a pint.—Mix.

QUITTOR.

WHAT THE DISEASE IS.

It is an inflammation located in the sensitive part of the foot within the hoof, which secretes pus or matter, and as it is impossible for the pus to escape through the hoof, it burrows in different directions, as shown by our illustration, finally finding vent at the coronet or top of the hoof, discharging a thick, creamy matter. It may form a single sinus or pipe before it escapes, or there may be several. A swelling shows at the coronet before it bursts forth. The amount of pus discharged is no guide to the extent of the inflammation.

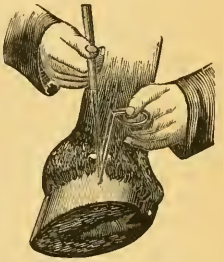
EXTERNAL APPEARANCE OF QUITTOR.

RAVAGES INSIDE THE FOOT.

DIFFERENT CAUSES OF QUITTOR.

Sometimes the horse accidentally pierces the coronet with the calk, which inflames and often burrows downward, to break out again, however, at the top. The pricking of the sensitive part of the foot while shoeing, will often start a quittor. Suppurating corns if not attended to, often terminate in this way.

CORRECT TREATMENT OF QUITTOR.



OPERATING IN QUITTOR.

No treatment equals slitting the sinuses with a knife. To do this, the hoof on the quarter must be rasped off until the light colored horn is exposed; then probe with a flexible probe of any kind to learn the depth, and run a sharp, small knife down to the bottom of each sinus. The knife should follow the probe, as shown by our illustration, and cut it through. If some are so deep as not to be reached with a knife, probe with a twig of broom to learn its depth. Do this carefully and thoroughly. Wet the twig and after dipping it into the following powder, insert it into the sinus. Do this several times until all parts of the sinus are touched: —

Corrosive Sublimate, one drachm;
Wheat Flour, three times its bulk.—Mix.

Repeat as often as necessary.

THRUSH.

COMMENCEMENT OF THRUSH.

DESCRIPTION OF WHAT THE DISEASE IS.

It is a foul discharge issuing from the cleft of the frog, attended with decay of the horn. It has a very offensive smell. We give an illstration showing its location.

THE MAIN CAUSE OF THRUSH.

If in the fore feet, it is generally the result of navicular disease; the foot feels hot and hard; a slight moisture bedews the center of a much diminished frog. No odor is apparent unless a piece of tow be inserted into the cleft of the frog, and withdrawn, when it will be observed. In the hind feet, it is entirely caused by filthy stables, allowing the feet to stand in decaying manure. It is very offensive.

DISINFECTING TREATMENT OF IT.

To remove the offensive smell, wash the feet thoroughly with:—

Chloride of Zinc, two scruples;
Water, one pint.—Mix.

All the ragged parts must be cut away, as well as the white, powdery, decayed horn, and substance, even if the flesh is exposed, and the frog much reduced. Replace the shoe, and wash daily with:

Chloride of Zinc, one scruple;
Water, eight ounces.—Mix.

Keep the feet clean, and use the knife to remove any white, powdery substance that may appear. This is all that need be done. The fore feet can be treated in the same way, yet it is not always advisable to cure it if caused by navicular disease, or the horse will go lame; merely retard the decay of the horn.

CANKER.

COMMENCEMENT OF CANKER.

GENERAL CHARACTER OF THE DISEASE.

It is of like character, and rather an aggravated form of thrush. The discharge is more abundant and more offensive. It invariably commences at the seat of thrush, but spreads and involves the sole. Large quantities of horn of a fungus character, grow out, which flake and peel off, as shown by our engraving. The same causes produce it that produce thrush, but it seems to be more constitu-

tional with the horse. It may involve one foot or all feet. Sometimes the treatment will cure all the feet but one, where it seems to remain in spite of all remedies. Suddenly that foot may heal with remarkable rapidity, and the horse seem sound all round, when it will break out again in some other foot.

BAD CASE OF CANKER.

PROPER TREATMENT TO CURE IT.

Cut away every portion of the detached horn, and pare off as much of the diseased horn as is possible. Apply the following dressing: —

Chloride of Zinc, half an ounce;
Wheat Flour, four ounces.

Mix and apply to the foot dry; the moisture will soon affect it. Apply to the sound part of the foot before you dress with the above, a weaker preparation, as follows: —

Chloride of Zinc, four grains;
Flour, one ounce.—Mix.

DRESSING FOOT IN CANKER.

Tack on the shoe and pad well over the sole, and confine the padding with pieces of iron, crossing diagonally from one underside of the shoe to the other, as shown by our engraving, as it is well to have as much pressure as possible. Repeat the cutting and dressing every second day. As the parts get better, contract the space covered by the strongest dressing.

SEEDY TOE.

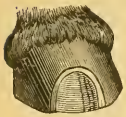
WHAT THE DISEASE CONSISTS OF.

It is the separation of the two layers of horn which form the outside covering or hoof. It commences at the toe, and can be seen when the shoe is off, or detected by tapping on the hoof, which will sound hollow. Our illustration shows this separation of the layers of horn.

SEPARATION OF HOOF IN SEEDY TOE

TREATMENT OF THIS DISEASE.

The horse must not be worked or you may have a more extended separation. All the outside portion of the hoof that has separated, must be cut off, and this must be done every two weeks until a new hoof has grown out. We give an illustration showing the appearance of the foot after the cutting away has been done.



OPERATION FOR SEEDY TOE.

TREAD AND OVERREACH.

This is the stepping of one foot on the other, which often results in wounding the coronet by the calks.

THE TREATMENT OF TREAD.

It should be bathed three times a day with the following cooling lotion: —

Chloride of Zinc, eight grains;
Water, eight ounces.—Mix.

It must be protected from dirt and dust by a cloth.

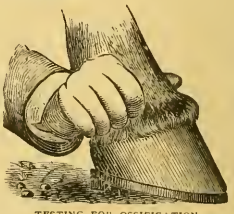
TREATMENT OF OVERREACH.

This produces a wound of the same nature, but is generally more severe. The lotion recommended for tread can be used three times a day, thoroughly cleansing it.

OSSIFICATION OF SIDE BONES.

CHANGES CAUSED BY THIS DISEASE.

This trouble is a changing of cartilages which form the wings of the bone of the foot into bone. These cartilages lie immediately under the skin, above the hoof at the quarters, and in a natural state are pliable and semi-elastic. If they are hard and unyielding



TESTING FOR OSSIFICATION.

ossification has already taken place. We give an illustration showing the manner of testing this matter.

WHAT THE EFFECTS ARE AND TREATMENT.

Heavy horses in large cities rarely escape, and generally, after the lameness during the acute stage has passed, do not show further trouble. Sometimes the extensive ossification, together with bad shoeing, will produce corns in the heels, and thereby result in lameness. This must be remedied under the proper treatment for corns and intelligent shoeing. During the inflamatory stage cooling lotions and warm foot baths may be used, followed by a sharp blister at the coronet. A bar shoe is of benefit in the later stages, accompanied by a dressing down of the heels so a space is between them and the shoe.

CHAPTER X.

GENERAL DISEASES.

CONTENTS OF CHAPTER.

EPIDEMIC INFLUENZA—EPIZOOTIC.—General character of the disease and its complications—Former epidemics—Its first symptoms of attack—The more serious and fatal symptoms—Serious termination—The most sensible mode of treating it—The best remedies to use.

STRANGLES—DISTEMPER.—Peculiarity of its attack on young horses—The first symptoms that show—The progress of the disease—The treatment by remedies and surgical operations—Final instructions.

FARCY.—Characteristics of this disease—Its relation to glanders—Varying symptoms—The only treatment recommended—Its success.

GLANDERS.—Its dangerous character—Its different stages—How it differs from nasal gleet—How to examine the nostril—Peculiarity of chronic glanders—The latest scientific treatment, said to be successful.

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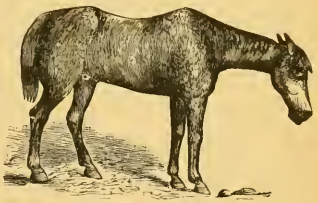
BIG HEAD—OSTEO SARCOMA.—Particulars of this strange disease—What its causes are—What it ends in—The treatment internally—Local applications.

EPIDEMIC INFLUENZA — EPIZOOTIC.

WHAT IT IS, AND ITS PREVALENCE.

Professor Law, of Cornell University, New York, considers it a specific typhus fever, complicated with inflammation of the mucus membranes lining the air passages, and less frequently of the lungs, pleura heart, liver, stomach and bowels, and even the muscles and lining of the joints. Similar epidemics have occurred twenty times in two hundred years. In 1872 this disease communicated from place to place with varying rapidity. It occupied some nine months in crossing this continent. There is no doubt about its contagion.

WHAT THE FIRST SYMPTOMS ARE.



FIRST SIGNS OF INFLUENZA.

The attack is usually sudden, and the horse, which half an hour before seemed well, suddenly droops his head, ears, and lips, partially closes his eyes, and stands with one or two legs semi-flexed, to bring relief. He remains in one position, with arched back and cracking joints, if moved. It is sometimes less marked, and the cough may be the main symptom. It may be dry and husky, and attended with hasty breathing. The pulse is rapid, the urine scanty, and high colored, and the dung hard and mucus covered. The membranes of the nose and eyes are reddened, and hence the name of "pink eye" which some call it. The ear placed at the wind pipe, detects an unusually loud and blowing murmur. In slight cases, the watery discharge from the nostrils changes into a white mucus one, and the cough becomes loose and easy, the fever abates, and recovery ensues.

MORE SERIOUS AND FATAL SYMPTOMS.

Toward the third or fifth day, the cough becomes deep and powerful, the pulse and fever increases, the appetite is fastidious, the

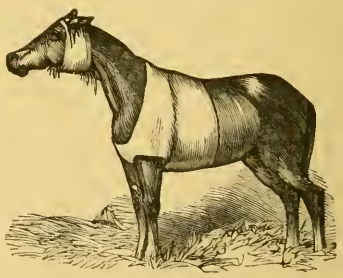
eyes swollen and watery, nasal membrane spotted, swallowing is painful, and the water returned through the nostrils. If the pleura is implicated, there will be extreme tenderness between the ribs.

TESTING FOR FATAL SYMPTOMS IN THIS DISEASE.

If the abdominal organs are affected, there will be great torpor and stupor, with a tense, tender belly. The urine will often be brown, or even red. The dung will be one or two balls, passed frequently, with much straining, and covered with mucus. These are aggravated as the disease grows worse. Rheumatism or dropsy may set in.

HOW TO TREAT IT SENSIBLY.

Its treatment consists in a warm box stall, warm blankets, and laxative food. Remove costiveness by copious injections of warm water, to which may be added two drachms of aloes. Follow with: —



HOW TO CLOTHE THE HORSE.

Liquor Acetate of Ammonia, three fluid ounces;
Extract Belladonna, one drachm.—Mix.

Give twice daily in half a pint of water. If the throat is sore, prepare the following: —

Belladonna, one drachm;
Chlorate of Potash, two drachms;
Honey, one teacupful;
Vinegar, a table spoonful.—Mix.

Smear the back teeth with this preparation, and let it gradually work down the throat.

When there is extreme prostration, or after the fever has subsided, the following may be given with benefit:—

Aromatic Spirits of Ammonia, one fluid drachm;
Carbonate of Ammonia, one drachm;
Tincture of Gentian, two fluid ounces.—Mix.

Repeat every two hours in half a pint of water, until benefit is seen, then extend the time between doses.

Much more depends on warmth and care than on a great deal of medicine. In fact, in many slight cases, laxative food and warm clothing is all that is necessary. If the discharge is not freely established, in the early stages of the disease, the use of the nose bag, as directed for "common cold," will very materially assist.

HOW TO BRING THE DISCHARGE.

STRANGLES—DISTEMPER.

DESCRIPTION AND CHARACTERISTICS.

This is peculiarly a disease of young horses. It generally attacks horses from three to five years of age. If a horse does not contract it before this latter period, it generally escapes. It may occur without apparently any previous contagion, yet there is no doubt about its contagious character. If it once commences on a place, it generally attacks all the young horses before it ceases. The peculiar feature of the disease, is a swelling or tumor under the jaw. The size and condition of the tumor indicates the severity of the disease.

COMMENCEMENT OF STRANGLES.

THE FIRST SYMPTOMS OF AND AN ATTACK

Will be a slight indisposition, the horse evidently being unwell. In a few days the neck gets stiff, and the enlargement appears. It is at first hard, hot and tense.

A discharge appears at the nose, the throat is sore, breathing hard, the hair stares, and appetite lost. It stands with eyes half closed as shown in our engraving, the picture of distress. In fact, all the symptoms, with the exception of the size of the tumor, resembles common cold. As the disease progresses, the tumor softens, becomes prominent at some particular spot or spots, and if left to itself would finally burst, either externally or internally. As soon as the discharge takes place, in ordinary cases, the horse gets better and recovers appetite and strength.

A VERY BAD CASE OF STRANGLES.

THE TREATMENT OF THE DISEASE.

The treatment is almost entirely local, the chief attention being paid to the tumor. The moment it seems to "come to a head," an incision must be made, to allow the escape of the pus, which may amount to a pint. If the swelling does not seem to show signs of "coming to a head," apply the following blister, which must be applied with a brush, as the horse will not allow any rubbing: —

Spirits Turpentine, two fluid ounces;
Laudanum, one fluid ounce;
Spirits Camphor, one fluid ounce.—Mix.

Apply night and morning, until soreness is produced. After each application, apply several thicknesses of flannel to the throat, and confine with an eight-tailed bandage, as shown in our illustration. As the tumor points, apply a twitch to the upper lip of the horse, having one man holding it, elevating the nose. Take a sharp knife, and make a free opening, at one cut. Rest the thumb on the back of the blade, at about the depth you want to cut. If the swelling is on one side, make but one incision; if on both sides, make one on each side. If there is great trouble in

HOW TO APPLY A BANDAGE.

breathing use the nose bag, and steam the nose every fifteen minutes, as directed in common cold. A teaspoonful of the ethereal tincture of phosporus may be poured inside the bag at each application, and is a great aid.

EXPLICIT INSTRUCTIONS ABOUT TREATMENT.

To purge is to kill in this disease. Don't waste any strength by bleeding. Feed gruel, hay tea, or soft food such as the horse can eat. If it is a bad case, thin liquid food is all can be taken.

FARCY.

CHARACTERISTICS OF THIS DISEASE.

There is a strong probability that farcy is but the advance agent of glanders, at least that in time it would end in that incurable disease. Many veterinarians claim to cure farcy, even in its worst stages.

SYMPTOMS OF AN ATTACK.

INSIDE OF HIND LEG IN FARCY.

The symptoms of farcy are at first, elevation of temperature, loss of appetite, and swelling of the extremeties. The swellings of an acute farcy are observed in the extremities; the whole limb may become engaged so as to bear a strong likeness to acute lymphangitis. The surface, instead of being uniform, as in the last mentioned disease, is rough and uneven; there is pain and lameness, the lymphatics and glands become swolen, and form what are called farcy cords and buds, as shown by our illustration; they are generally situated away from the articulations; the buds burst, and emit a pus-like substance. They generally are in groups or bunches, and may affect almost any part of the body. After they burst they present very

unhealthy, and ragged, suppurating edges. In its incipient stage, before the external appearances present themselves, the disease simulates thoracic pain, and rheumatism.

THE ONLY TREATMENT RECOMMENDED.

Apply biniodide of mercury ointment to the swellings; treat the buds and ulcers with lunar caustic; apply it freely, and observe great cleanliness. The portions of skin on the extremity of the sores, and the sores themselves, wash with a solution of chloride of lime. Feed the animal with good oats, hay, and vegetables, and administer such tonics as quinine, iron, nux vomica, arsenious acid, etc. At the best it will be very tedious and more difficult than any ordinary man will undertake.

GLANDERS.

DESCRIPTION OF ITS DANGEROUS CHARACTER.

It is one of the worst, most dangerous, dreadful, and loathsome diseases with which man can be innoculated. When an animal really is afflicted with glanders, any person who studiously and intelligently reads the following can make a correct diagnosis.

When the malady is preceeded by an excess of animal heat, a rise in temperature, you will find the disease ushered in by an inflexibility of the muscular system, shivering, stiffness, or rigors, which sometimes are continuous for days. The pituitary membrane (phlegm secreting or Snyderian) is of a dark copper color at first, which afterwards changes to a spotted state, the spots being of a purple color. These spots soon become small, ragged-edged ulcers, from which issue a copious discharge of a thin greenish and fœtid nature; the submaxillary (under the jaw) glands are indurated and enlarged, and, when felt, are, in well-developed cases, immovable, being attached to the jawbone. Our illustration shows the location of the gland, and its enlarged condition. This symptom being one of great importance, should not be forgotten; the lymphatic glands become

inflamed, burst, and emit a thin, bloody, and purulent discharge, which leaves an unhealthy looking sore; the pus discharged is of a poisonous nature, and over whatever surface it trickles, denudes the part of its hair and diseases the skin; the eyes are unhealthy-looking, the animal is averse to having the light permitted to freely enter the stall, and will try to avoid it. There is an almost constant running from them; this matter is of a cream color, and about the consistency of new or sweet cream. The nostrils are swollen almost invariably, and occasionally so much so as to impede respiration. We show the appearance of the discharge by an illustration of its first stages; also an illustration of the state of the discharge in the fourth and last stage.

FIRST APPEARANCE OF GLANDERS.

FOURTH STAGE OF GLANDERS.

Along the sides of the face, inside the nasal chambers, on the forearms and thighs, are lumps (by horsemen called farcy buds), and, when they are present, are very essential in dissipating doubt as to the presence of the disease, provided some of the other adjuncts mentioned are not wanting. In cases such as we have described, namely, acute glanders, the end is rapidly reached, as such cases are invariably fatal.

HOW TO EXAMINE A HORSE FOR GLANDERS.

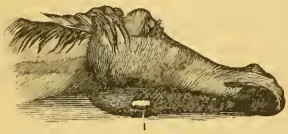
We give an illustration of the manner of examining the nostril of a glandered horse. Figures 1 and 2 denote the location of the ulcers, around which the mucous membrane will be of a dark, inflamed, copper color.

EXAMINING FOR GLANDERS.

PECULIARITIES OF CHRONIC GLANDERS.

The following are amongst the principal symptoms of *chronic* glanders. In some cases the disease is so mild as to be difficult of detection, apparently not disturbing the general health to any appreciable extent. There will be a discharge from one or both nostrils,

usually from one, which is almost always the left one. Why it should be almost exclusively the left we cannot say. The submaxillary glands are swollen, indurated, and, as above mentioned, attached closely to the jawbone. This swelling comes on rapidly, disappears quickly, and again reappears. They are of variable size and firmness, disappearing and reappearing sometimes in the course of twenty-four hours. The swelling may continue for several days, and then disappear and reappear as above. The glandular enlargements generally appear before the nasal discharge. As soon as the glands become enlarged, the Snyderian membranes become paler than usual, generally of a dull leaden color.



SWOLLEN GLANDS ALWAYS PRESENT.

When the nasal discharge commences, it presents a gluey, starch-like appearance. It is very tenacious, tough, and viscid. One chamber is usually more encroached upon by the dry discharge than the other, and both are more contracted than in health.

CAN GLANDERS BE CURED?

This is generally considered impossible to do, yet some veterinarians contend that cases have been, and may again be cured. An agent by which the ferment in the blood is destroyed, with other remedial measures, is considered by some as sufficient for a cure. Such an agent is sulphite of soda. It is to be given in one-half and one ounce doses, in cut feed, at night, and continued for several weeks. With this should be given mornings and noons, the following:

Powdered Gentian, three drachms;
Sulphate of Copper, in powder, two drachms.—Mix.

Given in a mash. These medicines should be continued some weeks after recovery. The best and most nutritious food is necessary, and as the discharge in glanders is highly infectious, and is easily absorbed into the systems of other animals, the patients should be carefully isolated.

HEAVES—BROKEN WIND.

WHAT THE PECULIARITIES OF THIS DISEASE ARE.

Heaves is closely related to asthma in the human family. It is attended with difficulty of breathing, and a sensation of constriction in the chest, wheezing, generally accompanied by a cough. It is caused by over-feeding on clover, etc., but more particularly on chaff, dry bran and oats, and bulky food, a great deal of which has generally to be eaten in order to obtain the requisite percentage of nutriment.

TO EXAMINE FOR INCIPIENT HEAVES.

Heaves is almost invariably observed to exist in proportion as clover is fed, and in order to confirm this statement, it is observed to decrease where land heretofore yielding clover has refused to produce it in paying quantities, so that other regimen has had to be supplied. It is also caused by animals being left in the stable for several days, and during this time being fed the ordinary quantity of hay which they would have received were they at work. Badly saved or dusty hay is a great producer of heaves. Violent exercise, which unnaturally distends the lungs, or an hereditary predisposition to the disease, favors its appearance. It has been considered a disease peculiar to old animals, but now the disease may be considered common to both young and old.

DESCRIPTION OF ITS SYMPTOMS.

It would be well to mention some of the prominent symptoms of the disease: There is a duplex or double motion of the flanks when the air is being expired. There is first a semi-collapse of the abdominal walls. Then, after an interval, which can be easily observed, an elevation of the posterior portion of the abdomen, the object of which is to complete the evacuation of the chest. There is generally a short, dry, weak, low-sounding cough, a wheezing in the throat, with evident manifestations of difficulty of breathing. This occurs

paroxysmally, and is due to violent exercise, the effects of suddenly breathing cold air, or after a drink of water. There is also, in such patients, a ravenous appetite, due to probable derangement of the digestive organs. Such animals do not stand work well, as the muscular tissue is soft, and easily made to show the effects of fatigue. A close stable is unsuited for any horse, but particularly so for those suffering from this disease.

WHAT ITS TREATMENT SHOULD BE.

Turn out the animal on pasture where there is no clover. Cornstalks or laxative food will relieve the complaint. In chronic cases give dry grain, consisting of clean, well-saved oats, with very little hay, and even this at night only, turnips, carrots, etc. The water should be given in small quantities, and a little lime occasionally added. Keep the bowels always laxative, to accomplish which, feed oil-meal occasionally. Give two ounces of pulverized belladonna leaves once a week, and occasionally a dose of hyoscyamus. But you will have to rely quite as much on good care and cleanliness as upon medicinal or remedial agents. Occasionally the following will produce excellent results, given night and morning:—

Arsenic, four grains;
Bicarbonate (Baking) Soda, one drachm;
Jamaica Ginger, one drachm.—Mix.

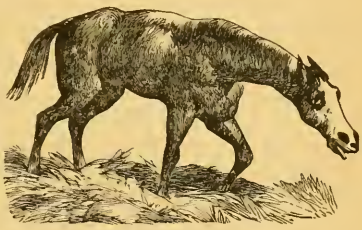
SUNSTROKE.

LIABILITY OF HORSES TO IT.

Sunstroke, or exhaustion from heat, is of frequent occurrence during the hot summer months. Horses in large cities are far more apt to be affected in this manner by the sun than those in the country or small towns, as in the former the heat is more concentrated. Country horses are also more healthy, and, therefore, offer greater resistance than those in cellar stables, etc., for, it must be remembered, that a horse can be sunstruck just as readily in a sub-cellar as

when exposed to the direct rays of "Old Sol." Tight, badly-fitting collars and girths have a tendency to disturb respiration, likewise preventing or impeding the oxygenation which should naturally go on in the blood. Being overworked and badly fed has, at any time, a tendency to originate and foster disease.

THE PREMONITORY SYMPTOMS.



A FATAL CASE OF SUNSTROKE.

The symptoms are various, according to the intensity of the attack and strength of the animal. The horse will sometimes suddenly stop, hang his head, throw his legs out sideways, so as to prepare for what he instinctively knows is coming, viz., insensibility. The peculiar manner of placing the limbs is for the purpose of making them act as props, so that, when the weight is unequally divided, they may still be enabled to maintain a standing position. When the animal drops, he not unusually becomes insensible, and dies without a struggle. In such cases there is observed stertorous breathing—snoring. Again, the disease may be ushered in by a fit of exhaustion. The horse appears to be suddenly tired, he flags. When the animal is whipped there is little response; the sensory nerves appear to be paralyzed; the perspiration, in most cases, usually rolls off the horse, or, if this should not be the case, there may be observed a dry, burning skin, on which the hand cannot rest with comfort; the gait is unsteady, and if much urged, he will lose his equilibrium and fall. When permitted to rest, the nose is kept near the ground, the veins are distended, the nostrils dilated, the conjunctiva injected, and the eyes seem to protrude; the pulse is weak, quick, and fluttering, and in bad cases, imperceptible. Unconsciousness soon follows, and if remedial measures are not soon brought into requisition, death ensues quickly, and not unfrequently this is the result, even in the face of every precaution being taken. The chances are against weak

horses, or those in a plethoric condition. When recovery does occur, it is slow, and the animal shows conclusive evidence of having had an attack of disease of the brain.

THE IMMEDIATE TREATMENT.

Bathe the head and neck with cold water, break some ice fine, and tie it over the foretop; renew the ice as it melts. Give injections per rectum. Soap and warm water will answer. Have the extremities well rubbed. If there is danger of insensibility, apply mustard to the sides and legs. If the pulse is falling, give stimulants, say five drops of tincture of aconite and an ounce of sulphuric ether, with half pint of ale, every thirty minutes, for an hour and a half. Three or four hours afterwards, give a drench, as follows: —

Ale, eight ounces;
Pulverized Opium, one drachm;
Pulverized Carbonate of Ammonia, one drachm;
Charcoal, two drachms.—Mix.

The ice should be kept on while it seems to relieve the animal. Keep in doors, in a well-ventilated stable, with fresh air; feed mashes, grass, and vegetables, and take good care of him afterwards, as a recurrence of the attack may follow.

BIG HEAD—OSTEO SARCOMA.

WHAT ITS PECULIARITIES ARE.

This disease shows itself by an enlargement or bony tumor on the face, between the nostril and eye, which finally breaks out in small holes, discharging a thick secretion. It ends in a complete degeneration of the bony structure. The disease is caused by defective nutrition, which fails to properly assimilate the phosphates, an important constituent of the bones.

THE TREATMENT OF IT.

In order to be successful, the treatment must be begun at once, by giving the following tonic night and morning, in a mash: —

Phosphate of Lime, six ounces;
Powdered Ginger, two ounces;
Peruvian Bark, four ounces.—Mix.

Give a tablespoonful at a dose, and in addition give daily at noon, one drachm of iodide of potassium in a mash.

Make an incision over the tumor and remove it with a knife, treating the wound with a solution of: —

Chloride of Zinc, one drachm;
Solution Carbolic Acid, one fluid drachm;
Water, one quart.—Mix.

Syringe the cavity twice daily.

CHAPTER XI.

DISEASES OF THE URINARY AND GENERATIVE ORGANS.

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HŒMATURIA—BLOODY URINE.—The first indications of the disease—Its more serious symptoms—The first remedies to give—Additional remedies if the first fails—To change medicine if difficult to give.

DIABETES INSIPIDUS—PROFUSE URINATING—Minor causes—To determine if violent diuretics have been given—To tell if turpentine has been given—A test for the presence of sweet spirits of nitre—Its intense thirst—The remedies to use and how to administer them.

SPASM OF URETHRA—RETENTION OF URINE.—Its spasmodic character—Its painful symptoms—How to distinguish from colic—The final test—What to do to relieve it—What to do when no medicines are to be had.

PARTURITION—FOALING.—Natural births—Complicated births—How they differ—When man's assistance is necessary—In presentation of one leg only—For a missing head—Presentation of buttock—When amputation of legs is necessary—How to do it—Trouble which may follow—To stop flooding—To remove the afterbirth—To cure leucorrhœa—What to do for inflammation of the womb.

DISEASES OF MALE ORGANS.—Inflammation of Testicles—Their symptoms and treatment—When castration is necessary—Dropsy of the scrotum and its treatment by hypodermic syringe—Tumors of the sheath—Warty growths.

EVIL RESULTS FROM CASTRATION.—Strangulated cord—Its causes and simple treatment—Swelling of the sheath—Its causes and its treatment—Strangulated penis and what to do for it.

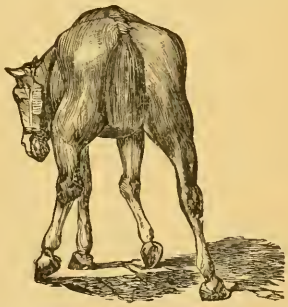
NEPHRITIS—INFLAMMATION OF THE KIDNEYS.

ITS CHARACTER AND CAUSES.

As its name implies, it is an inflammation of the structure of those parts. It in often caused by heavy doses of harsh diuretics. Medicines which stimulate the kidneys, do so by causing additional blood to tend to these parts. It is easy to see that if the remedy is too powerful, or in too large quantities, it may cause intense inflammation. Sweet spirits of nitre is a very harmless sounding name, yet it possesses power of a different character, if given in large doses, or too frequent. The actual facts are, that the urinary apparatus of a horse seldom needs much stimulant, and the changes in color of the water, are not necessarily alarming, being often the result of change of food or indigestion. No horse should be worked during the action of such remedies. Every excretion of a horse beyond what is natural, is a loss, and has to be made up by extra nutrition.

WHAT ITS SYMPTOMS ARE.

It commences with a decidedly quickened and hard pulse, and rapid, short breathing. suggestive of pain. The mucous membranes are pale, and the horse frequently looks towards the seat of pain, but not so fiercely as in colic. His head is depressed, back roached, and hind legs straddled, as shown by our engraving.



SYMPTOMS ALWAYS PRESENT IN URINARY DISEASES.

The straddling of the hind legs is not a sign of this particular disease, yet it always accompanies some urinary affection. The urine is scanty, for the cells of the organs are so inflamed, as to refuse to perform their accustomed duties. The animal refuses to "move around" in his stall, and seldom lies down. If pressure is made on the loins, as shown in our illustration, he will crouch with pain in evident agony. Pus and matter may be discharged with the urine, and if a fatal termination is threatened, it has a fœtid smell, and is deeply tinged with blood, showing disorganization; when the pulse grows quick and feeble, when pressure on the part brings no response, when perspiration covers the body, and a urinous smell is perceptible from the animal, death follows quickly.

TEST FOR INFLAMMATION OF THE KIDNEYS.

THE ONLY SURE TEST FOR THIS DISEASE.

In our illustration under head of "Retention of Urine," we show how to apply the only sure test for this disease. The operator must stand on the left side, as shown in the cut, as near the feet as possible, having a person holding up the left fore foot, to prevent the horse from kicking. Have the arm well soaped or greased, and gradually introduce the hand into the rectum by placing the ends of the compressed fingers against the center of the anus, and slowly, with equal pressure, gaining entrance. The kidneys lie on each side of the back bone, just forward of the hips. Advance the hand until nearly under them, when by a gentle upward pressure, the region of the kidneys can be touched, and note made of the heat. If they are swollen and inflamed, the part will be hot and excruciatingly sensitive, and care must be taken not to press too hard or too roughly, lest the horse be made frenzied by the intense pain, and do himself and the operator injury.

WHAT ITS TREATMENT SHOULD BE.

Mix a lukewarm mustard poultice, and spead on the loins; or

better still, if possible, cover with a fresh sheepskin, flesh side down, just from the sheep. If no sheepskin is at hand, apply the mustard poultice and cover with an oil cloth, and over that a blanket to retain the heat and moisture. Inject every hour:—

Warm Linseed Tea, one quart;
Laudanum, two tablespoonsful.—Mix.

Starch water may be substituted for linseed tea. Give internally at once, one dose of

Extract Belladonna, a half drachm;
Croton Oil, twenty drops.—Mix.

The object of the above is to create an action of the bowels, and relieve the kidneys of blood.

In addition to the above, sprinkle on the tongue every hour, during the acute stage, the following dose:—

Calomel, one scruple;
Opium, one drachm.—Mix.

During recovery, the food is fully as important as the medicine. It should be light and soft. During this period, the following dose should be given three times daily:—

Extract Belladonna, a half drachm;
Opium, two drachms.

Make into a pill with linseed meal and honey. If the pulse is hard and quick, give the following every half hour until benefit is seen:—

Aconite, ten drops;
Laudanum, half an ounce;
Water, half a pint.—Mix.

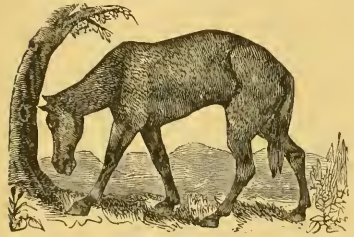
The above measures are to be taken in addition to the calomel and opium treatment, during the acute stage of the disease. Of course medicines used during the acute stages should be gradually withdrawn as the horse gets better. An attack of this kind will always leave the kidneys in an irritable state, and care must be taken in regard to use of diuretics afterwards.

HŒMATURIA—BLOODY URINE.

ITS INDICATIONS AND CHARACTER.

The blood may consist merely of small clots in the urine, which may coagulate after standing. It may mingle and give a brownish hue to the water.

WHAT ITS SYMPTOMS ARE.



APPEARANCE OF A HORSE DURING BLOODY URINE.

When the blood is profuse, the breathing will be short and quick, the pulse is lost at the jaw, and the pupils of the eyes dilated. The head is drooped, the back is roached, the flanks tucked up, and the legs widely separated as though the horse was fearful of falling. The accompanying illustration shows the position the horse assumes very plainly.

HOW TO TREAT THIS DISEASE.

Give as gently as possible, with no flurry or excitement, the following dose:—

Acetate of Lead, one drachm;
Water, half a pint.—Mix.

Repeat in fifteen minutes, or sooner, if no abatement is shown, adding one ounce of laudanum. If four doses do not relieve, add the following three times daily:—

Infusion of White Oak Bark, one pint;
Alum, two teaspoonsful.—Mix.

Give at one dose.

If it is difficult for the horse to stand if his head is elevated, the above prescription can be given in the shape of a pill or ball, by using one ounce of pulverized oak bark, or opium with the acetate of lead. On benefits being observed from the medicines, gradually withdraw them.

DIABETES INSIPIDUS—PROFUSE URINATING.

ITS SERIOUS NATURE.

Profuse dischage of urine is not generally serious in its results, if properly treated. Often a change of water or food will produce it. A closing of the pores of the skin increases the discharges. It is sometimes necessary to know whether the horse has been secretly tampered with, by an ignorant stable man, who may have given the horse a heavy diuretic. Below we give directions:

HOW TO TELL IF TURPENTINE HAS BEEN GIVEN.

Take a strip of blotting paper and dip it in the urine voided, and if on placing it at the nose it has the scent of violets, it is evident turpentine has been given.

TO TELL IF SWEET SPIRITS OF NITRE HAS BEEN USED.

Dip a piece of blotting paper in the urine, and dry it thoroughly. If it burns like touch paper, with a snappy action, you have proof enough.

ITS SYMPTOMS AND TREATMENT.

The thirst is intense, and the flesh and strength waste rapidly. Keep a pail of flaxseed tea before the horse, and let the diet be entirely of bran mashes and crushed or scalded oats. Keep the skin well cleaned and in action, and give every day the following dose:—

Iodide of Iron, one drachm;
Flaxseed Meal and Honey, sufficient to mix.

If a drench should be preferred, give the following:—

Phosphoric Acid, one fluid ounce;
Water, one pint.—Mix.

Give night and morning.

RETENTION OF URINE—SPASM OF URETHRA.

PECULIARITIES OF THIS DISEASE.

This is a spasmodic contraction of the muscle which controls the passage of the urine out of the bladder. It is difficult to trace its first cause in all cases. The exposure and ill usage, which in some horses would produce colic, in others results in urinary affections.

WHAT ITS SYMPTOMS ARE.

TO DETERMINE IF THE BLADDER BE DISTENDED.

The wide straddling gait is also here, together with a total suppression of all discharges of urine, or only small portions are ejected. The pain caused by this over-distension of the bladder is most intense, and drives the horse almost to madness. By persons who are alarmed at the agony shown, it is sometimes mistaken for colic, yet the symptoms are decidedly different. It can be easily and surely determined by introducing the arm into the rectum and making pressure downward, when the dilated bladder will be felt. Great care must be used while giving this test.

WHAT TO DO FOR IT.

Medicines to reduce the spasmodic action should be given, and none are better than the following:—

Suphuric Ether, four fluid ounces;
Laudanum, four fluid ounces;
Water, one quart.—Mix.

Give the above at one dose. In addition to the above, inject the same amounts of ether and laudanum in three pints of water, into the rectum, and place the hand over the anus to prevent its escape for ten minutes. If one dose does not relieve, repeat the injection in fifteen minutes, and again, until the spasm is relieved and urine flows. The bladder can also be evacuated by a catheter.

HOW TO RELIEVE WHEN NO MEDICINE IS TO BE HAD.

If the horse should be attacked where medicines cannot be obtained, bleed him from several openings until he faints. Open both jugular veins and let them flow until the urine flows forth from the urethra, or the horse faints. The moment the horse faints all contraction ceases, and the urine will flow mechanically. If it does not, the arm may be introduced into the rectum, and gentle pressure made upon the bladder.

PARTURITION—FOALING.

WHEN IT IS NATURAL AND UNCOMPLICATED.

A natural presentation, or birth of a foal, is when both fore feet are presented at the same time, with the head lying extended between them; or when both hind feet are presented, thus forming a gradual wedge, with an easy delivery, rarely needing any assistance from man. In some cases, one fore foot only is presented, or the hind foot; or the fore feet may be presented, with the head turned on the side, over the back, or doubled on the breast. In cases of this kind, assistance is necessary to save the life of the mare, or at least severe injury.

DIRECTIONS FOR COMPLICATED CASES.

The limbs can always be distinguished by inserting the hand until the knee or hock is felt. Secure the leg with a noose of rope, and partially return, inserting the arm, well oiled, until the missing member is found, when it must be closely doubled, extracting the knee or hock, and then the foot.

When the head is missing, the foal will have to be partially returned, until an ear, or the socket of the eye can be reached, or a small hook, with cord attached, may be inserted in the cavity under the jaw, and as the other parts are pressed back, the head may be extracted.

When there is presentation of the buttocks, it is sometimes most serious, when the pains are constant and violent, in powerful mares. The hind legs of the foal may have to be dissected at the hips and brought away, when the rest of the body will follow readily. · When it is necessary to thus cut away the limbs to save a mare, the amputation must be either at the hips or shoulders, and not at the hock or knee joints. The skin must be flayed off the leg, but left attached to the body.

All operations must be done gently yet forcibly, always applying force when the mare strains, pulling slightly downward as well as backwards.

TROUBLES WHICH MAY FOLLOW.

Flooding may follow from lack of contractile power of the womb. Cold water or bags of ice applied to the spine, at the loins, and injections of cold water, to which may be added pulverized alum, may be thrown into the womb. Give also internally half an ounce of powdered ergot.

RETAINED AFTERBIRTH.

For retained afterbirth, the hand well oiled can be inserted, within twelve to twenty-four hours after the birth, and its attachment removed with the fleshy end of the fingers, piece by piece, stimulating contractile power of the womb.

TREATMENT OF LEUCORRHŒA.

Leucorrhœa, or catarrh of the womb, may follow, which is denoted by a whitish discharge, which will be fœtid if caused by retained afterbirth. Any fluid which may be in the womb, must be first drawn off by a catheter, through which can be injected tepid water first, following with a solution of one drachm of sulphate of zinc in a quart of water, daily.

FOR INFLAMMATION OF THE WOMB.

This disease will be heralded by shivering fits, colicky pains, twisting of the tail, arching of the loins, vulva red and swollen, together with straining, and a fœtid discharge. If the hand is

inserted, the womb will be found dilated with a fluid, and highly inflamed. This fluid must be drawn off with a catheter, through which must be injected warm water, twice each day, followed by half a pint of the following cooling lotion: —

Sulphate of Zinc, one drachm;
Laudanum, two fluid ounces;
Water, two quarts.—Mix.

Ten drops of aconite may be given, in half a teacup of water, every hour, if feverish symptoms prevail, with rapid pulse.

DISEASES OF THE MALE ORGANS.

INFLAMMATION OF THE TESTICLES.

This may be the result of serving too many mares, with extensive traveling, or from a glanderous tendency. There will be a straddling gait, a raising and dropping of the testicle, which will be enlarged and tender. In its early stages give the horse complete rest, and bathe freely with the following lotion: —

Acetate of Lead, one drachm;
Laudanum, two fluid ounces;
Water, two quarts.—Mix.

If there is evidences of matter forming, it must be given free exit with an opening by the knife. If destruction of the testicle is threatened, it is better to castrate, and avoid more serious trouble. If the horse is feverish, give ten drops of aconite at a dose, as often as necessary.

DROPSY OF THE SCROTUM.

This is usually associated with dropsy of the abdomen, which must be first treated before much benefit can be derived; after this, the fluid can be drawn off with a hypodermic syringe, and the parts supported with an elastic bandage. Iodide of potassium should be given in drachm doses, daily.

TUMORS OF THE SHEATH

May may be removed by twisting off, or by ligatures, gradually tightened, daily, until they drop off.

WARTY GROWTHS

May be clipped off and the parts touched with lunar caustic to prevent bleeding. In some cases of indurated growth, or hardening of the end of the penis, the whole end of the penis may have to be amputated.

EVIL RESULTS FROM CASTRATION.

STRANGULATED CORD.

This is caused by the incision in the skin being too small, and the cord left too long, which protrudes, becoming red and tense from strangulation. It may be known by a straddling gait and feverish symptoms, and the protrusion of the cord. The remedy is simple, which is to enlarge the wound and push the cord up.

SWELLING OF THE SHEATH.

This may arise from a bad condition of the system, but generally is caused by premature closure of the wound, imprisoning matter. The wound should be reopened, and fresh lard should be applied to prevent a repetition. The parts should be bathed every hour with warm water to hasten the formation of matter, after which the swelling will go down. If the penis should be imprisoned, or should be protruded and cannot be drawn back, it may be necessary to incise the sheath or penis, and apply cold water with astringents, together with manipulation by the hand, to return it.

CHAPTER XII.

ACCIDENTS AND INJURIES.

CONTENTS OF CHAPTER.

POLL EVIL.—Its location and causes—To examine for it—To determine its character—The first step to take—When to operate and how—The lotions to use after—Cautions to observe.

FISTULOUS WITHERS.—The prominent features of this disease—Its first appearance—What to do in a recent case—How to use the knife—Succeeding treatment—What to do for a neglected case—How to insert a seton—Application of remedies.

BROKEN KNEES.—How to bathe—To determine the extent of injury—To probe—To insert a seton—Lotions to use—Care of the part afterwards.

OPEN SYNOVAL CAVITIES OR JOINTS.—How to distinguish them and their extent—The effects—The treatment by lotions—To allay feverishness of horse—To close the open joint—How to apply the remedy.

WOUNDS OF ALL KINDS.—Lacerated wounds—Description and treatment—To sew up a wound—How to take the stitches—How to tie—To close an incised wound or cut—Abraided wounds—Harness galls, both fresh and long standing—Punctured wounds—Opening with a knife—Treatment of bruises—Removing bunches from leg—Wounds in feet—Pricks from shoeing—A cheap remedy for all wounds always at hand—Directions for additional care.

BITE OF MAD DOG.—The prevention of hydrophobia—The only sure and certain cure—Tested for fifty years by the best medical authority—How to treat the bite—A cheap and home-made substitute—Every man should know it.

POLL EVIL.

WHAT IT IS, AND WHERE LOCATED.

Poll-evil is invariably the result of some injury. This may arise from various causes; excessive friction on the nape of the neck from bridle or halter. The bungling and cruel manner of forcing a small collar on a large horse, contusions from blows on the part, the unnatural positions in which the head of a horse is often placed by mechanical force, all are liable to produce some local injury, which frequently terminates in induration of the parts, or abscess, when the injury has been severe. Sometimes from neglect deep sinuses form, which makes the case complicated and more difficult to cure.

TO EXAMINE FOR POLL EVIL.

Place the fingers on the part and press, not too harshly. If the horse flinches quick, the injury is superficial. If some time elapses, and the pressure is hard before any evidence of pain is shown, it is deeper seated and more serious.

WHAT TO DO AND HOW TO DO IT.

Don't waste any time. Apply to the part, daily, tincture of cantharides, with a small brush, until a blister shows. As it dies away, apply again, merely keeping the part irritated. As soon as the swelling appears, watch for some particular spot to point up, or that is softer than surrounding parts. Have the animal cast, and taking a keen operating knife open the spot, allowing the matter to escape. Take a flexible probe and find the extent and direction of the sinuses, and run the knife to the bottom of each and lay it open. Endeavor to have all the cuts lead into one channel. Cut a clear, clean gash, and do not hack and saw. Clean out with a syringe and cold water, cutting out any diseased part which may remain, and rub the sides of the wounds with lunar caustic; also, have thoroughly injected, three times a day, some of the following lotion: —

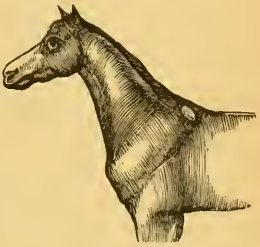
Carbolic Acid, one drachm;
Tincture of Muriate of Iron, one drachm;
Water, one pint.—Mix.

Place a rag dipped in a solution of tar over the part to keep off the flies. The knife is the quickest and most humane method of treating, and any ordinary man of common-sense ideas can use it. Care should be taken not to cut through the ligament under the mane. The old methods of torture are relics of the dark ages.

FISTULOUS WITHERS.

DESCRIPTION OF THIS AILMENT.

This resembles poll evil, except that it is located on the withers. When it first appears it is about the size of an egg, and has the appearance shown in the engraving.



FIRST APPEARANCE OF FISTULOUS WITHERS.

WHAT TO DO IN A RECENT CASE.

Have a sharp-pointed knife, and standing close to the side of the horse, near his middle, with the back of the knife to the horse and point up, pierce the tumor, and cut quickly upward and outward, dividing it through the middle. Rub lunar caustic over the interior of the wound, and keep it moistened with the following lotion: —

Carbolic Acid, one drachm;
Water, one pint.—Mix.

Cover with tarred rag to keep away the flies.

WHAT TO DO IN A NEGLECTED CASE.

An operation must be performed similar to the one directed for poll evil. All the pipes and sinuses must be opened to the bottom and treated in the same manner, and kept wet with the above solution. If the bone is affected, the diseased part must be cut away before it will permanently heal. If a sinus takes a deeper course towards the chest, or into the muscles of shoulder, where it would be

dangerous to cut, the sinus must be probed, and after learning its extent, dip the probe into powdered bi-chloride of mercury, inserting it again and again, until every part is touched by it. If it has no outlet below, one must be made by taking a seton needle and running a tape seton down through it. This should be left in and moved daily, until healthy action has taken place.

BROKEN KNEES.

WHAT TO DO FOR THEM AT FIRST.

Wash thoroughly with milk-warm water, by pressing a sponge to the leg above the injury, letting the water run down over the part. Do not mop and smear the part.

HOW TO DETERMINE THE EXTENT OF THE INJURY.

After a short time an examination will show the extent of the injury. If, on pressure of the finger to the swelled knee, the indentation is slow to go away, it is serious. Observe if, in falling, the horse made a sack or pouch below the wound, and between the skin and flesh.

HOW TO TREAT THEM.

EXAMINING A BROKEN KNEE

INSERTING A SETON.

In ordinary cases, when merely the skin is broken, the arnica lotion mentioned below is sufficient, keeping the part wet, day and night, and following with the chloride of zinc lotion, as in more serious cases. If a pouch is formed below the wound which contains dirt and gravel, probe the wound as shown in the engraving, to learn its extent, and insert a seton with a curved seton needle, in the manner illustrated. It should be moved its entire length twice every day. Three days after the formation of pus or matter it may be withdrawn. Do not attempt to poke out the dirt. It will discharge itself through the

opening. The knee must be kept constantly wet day and night with the following lotion, either by applying a sponge to the leg above and allowing it to run down, or by a single thickness of cloth loosely applied over the part, and kept dripping wet. No bandages are admissible in these cases. The first lotion applied should be:—

Tincture of Arnica, two fluid ounces;
Laudanum, one fluid ounce;
Water, one quart.—Mix.

Have the horse's head tied up so that he cannot lie down. In three or four days, if all goes well, and suppuration takes place, apply the following lotion, in day time only:—

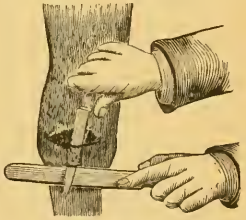
Chloride of Zinc, one scruple;
Water, one pint.—Mix.

Keep the part constantly wet with this, and if the directions are closely followed, all will go well.

OPEN SYNOVIAL CAVITIES, OR JOINTS.

WHAT THESE ACCIDENTS ARE.

There are several kinds of synovial cavities which may be ruptured and allow the escape of the synovia, or "joint oil." The smallest are bursæ, which are small bladders lying between the tendons, to facilitate their motion over each other. Capped hock is an enlarged bursæ. The next in importance are the sheaths which entirely envelope and enclose a tendon, and lastly a cavity of a joint.



OPENING THE POUCH.

HOW TO KNOW THAT ONE HAS BEEN RUPTURED.

From ordinary wounds, blood and serum only issue. If one of these cavities has been ruptured, there will be a discharge of transparent fluid, like the white of an egg. The bursæ discharges

the least, and a joint the most synovia; a joint, however, is more rarely injured, as it is well protected by capsular ligaments and muscles.

HOW TO TREAT THEM.

They should be treated precisely as a broken knee—using the arnica lotion first, until a discharge is established, and then following with the chloride of zinc lotion. Use no bandages, but keep the parts wet day and night, for first three or four days, with the arnica lotion.

WHAT TO DO FOR AN OPEN JOINT.

If the animal is excited or depressed, give the following drench:

Sulphuric Ether, one fluid ounce;
Laudanum, one fluid ounce;
Water, half a pint.—Mix.

Repeat the above until a change is seen. Have the animal put in a sling, where he cannot by any possible means hit his knee. To reverse in the stall is a good way. Treat precisely as a broken knee, and after the chloride of zinc has begun to act slightly, astringing the part, with a soft camels-hair brush apply one or two coats of collodion over the mouth of the wound to confine the synovia.

If constipated, give green food or bran mashes, and if feverish, give ten drops of tincture of aconite in a little water, several times each day.

WOUNDS OF ALL KINDS.

A LACERATED WOUND.

TREATMENT OF A LACERATED WOUND.

A lacerated wound is a tear or rupture of the muscles more or less deep. We show a lacerated wound by an illustration. Its treatment consists in keeping the wound wet day and night with the following lotion:—

Tincture of Cantharides, one fluid ounce;
Chloride of Zinc, two drachms;
Water, three pints.—Mix.

Cover the wound with a rag, which keep dripping wet. When necessary, stitches may be taken in it. If an artery is ruptured it must be tied. After suppuration has set in, and the discharges well established, use the following lotion only, and keep the wound wet constantly: —

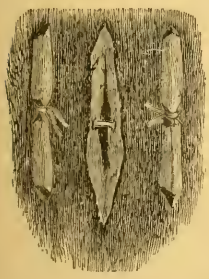
Chloride of Zinc, eight grains;
Water, half a pint.—Mix.

HOW TO TREAT CUTS AND INCISED WOUNDS.

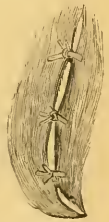
AN INCISED WOUND.

We give an illustration of an incised wound, which is a cut which divides the parts. Its first treatment is to dash cold water again and again upon the part until it stops bleeding. If an artery is cut have it tied. Wait until the wound is nearly dry, or until its sides are slightly sticky, and taking a curved seton needle, take stitches in the wound two inches apart, if the wound is a large one. Commence the stitches one inch and a half back from the edge of the wound, as shown by our illustration. Do not tie the sutures together until all are inserted, then have an assistant hold the wound together while the stitches are being tied, not too tightly. As the wound suppurates, if the stitches bind, cut them, and as they work loose, withdraw them. Keep the wound wet with the chloride of zinc lotion, which is the best preventive of proud flesh. We show the different methods of sewing up wounds, also, how the stitches appear after being tied. Sometimes a wound is of such a deep and gaping nature, that pieces

SEWING UP A WOUND.



SUTURE FOR GAPING WOUNDS.



WOUND AFTER SEWING.

of wood are placed on each side, and the stitches are tied at each end, and tightened as shown.

TREATMENT OF ABRAIDED WOUNDS.

These are more like scratches, and should be thoroughly washed with warm water, by allowing it to run over the parts. A continued application of common kerosene oil, keeping the part saturated with it, will heal it with remarkable rapidity, and restore the hair and avoid a blemish. Under this head come

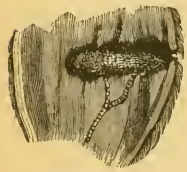
HARNESS GALLS.

No treatment will be successful without cleanliness and attention to both the animal and the harness. Too small or too large and ill-fitting neck-gear must be attended to and remedied; for so long as one source of the evil remains, the trouble will continue. Of course so long as the horse must work in the same kind of harness the places cannot heal. By substituting a breast harness, success will attend the application of the following lotion: —

Sugar of Lead, one ounce;
Sulphate of Zinc, one ounce;
Alcohol, six fluid ounces;
Water, one quart.—Mix.

Apply with a sponge three or four times each day. If it is an old case which has hardened, the horse will have to be allowed rest, and the hardened place blistered by any of the blisters mentioned in this work. Saddle galls which have become hardened and callous, had better be dissected out with a sharp knife, and healed as an ordinary wound.

WHAT TO DO FOR PUNCTURED WOUNDS.



A PUNCTURED WOUND.

These are serious, and may lead to lock-jaw. There is only one mode of treatment, and that is to enlarge the opening or mouth of the wound, in order to give vent to the matter which will form. As will be seen by our illustration, the interior of the wound is always the largest, the skin being elastic. If this is not done, an abscess will

probably form. The point of a sharp knife should be inserted nearly to the bottom of the wound and a short cut made downwards. The cut is of no importance, and will heal without a blemish. Treat the same as other wounds, by arnica and chloride of zinc lotion, keeping it constantly wet.

HOW TO TREAT A BRUISE OR CONTUSED WOUND.

If it is of serious extent and the muscles badly jammed, but the skin not broken, it is better to make a smart cut through the centre of the swelling, to allow vent for the disorganized matter, which is sure to follow. It may then be treated as a lacerated wound.

BUNCH ON LEG FROM A BRUISE.

Sometimes horses hit their legs with their feet, making a bruise which does not go away, and leaves a hard lump like a callous, or even a splint. When the first inflammation has been allayed by cold water or lotions, a sharp blister, the same as used for splint, applied until it irritates, will cause the blemish to be absorbed, or, painting daily with tincture of iodine, will remove it readily, if not of too long standing. If a sharp knife be run through the centre before ossification takes place, it will heal and disappear.

WOUND IN FOOT, OR PRICK IN SHOEING.

In all cases the opening or puncture in the hoof must be made larger, so as to give free vent for the matter which is sure to form. If this is not done, quittor will be very sure to follow. It should be dressed several times a day with the chloride of zinc lotion, mentioned under treatment of lacerated wounds. If it is necessary to work the horse, which should not be done, a pledget of tow dipped in tar, may be placed in and over the puncture, and confined, but it must not be allowed to remain after the horse has returned to the stable. Place the foot in a warm foot bath, two or three times each day, for an hour at a time, and then apply chloride of zinc, eight grains in half pint of water. You will never have proud flesh if this lotion is used properly and faithfully.

A CHEAP REMEDY ALWAYS AT HAND.

Few people are aware of the value of kerosene oil for wounds of all kinds. They buy it under the name of Mustang, Gargling Oil, or with some other name, and consider it valuable, yet fail to use it when they can buy it cheaply by the gallon. In sudden emergencies, when no other remedy is at hand, it is of immense service. We know of an instance where it was used on a horse which had been run into by the cars, and badly mutilated, hardly considered worth saving, yet under the kind treatment of a gentleman, who covered the wounds with cloths which he kept saturated in kerosene, the horse completely recovered. It has the property of healing wounds, and stimulating the growth of hair over the parts, so that very little blemish remains.

DIRECTIONS FOR ADDITIONAL CARE.

Close attention must be paid to a horse laboring under an injury of this kind. Good food and the best of nursing is necessary. When directions are given to be followed day and night, it is so meant, and if the owner, or his hired man, is too indolent to closely follow instructions, we will not guarantee success from their treatment. The bowels should be kept open by use of bran mashes, boiled oats or green food. Tincture of aconite in doses of ten drops may be given several times a day, to allay any fever, and sulphuric ether and laudanum in doses of one ounce each, in a half pint of water, may be given if the horse is depressed.

BITE OF A MAD DOG.

WHAT IT IS AND HOW TO TREAT IT.

The disease which follows the bite of a mad dog, is most terrible to witness, and most fatal in its effects. It can be cured, if taken in time.

THE ONLY SURE AND CERTAIN CURE.

Professor Smith, of Baltimore, a very celebrated physician, has given a treatment for hydrophobia to the people, after a trial of fifty years, which treatment he has never known to fail, if used within three days after the bite. No mad stone is more certain in its relief, and every family has it.

JUST HOW TO TREAT THE BITE.

Wash the wound with warm water, and taking a piece of caustic potash, sharpen it to a point, and hold it half a minute in each part of the bite, thoroughly cauterizing the wound. Each mark of a tooth must be treated in this manner. Poultice the wound for a day or so, then dress with salve, made of

Carbolic Acid, ten grains;
Fresh Lard, two table spoonsful.—Mix.

Apply several times daily, until the wound is healed. This is a certain and sure cure.

A HOMEMADE SUBSTITUTE.

If parties live at a distance from drug stores, a substitute can be prepared by making strong lye out of wood ashes, boiling it down to the consistency of molasses, using it with a sharp pointed stick. This is a very effectual remedy, and costs nothing. Thousands of dollars are lost every year by not knowing this simple remedy.

CHAPTER XIII.

PARASITES AND DISEASES OF THE SKIN.

CONTENTS OF CHAPTER.

MANGE — ITCH — PRURIGO — RINGWORM.—Their different characteristics and effects — The different tests for them — Methods of relief — Lotions to use and how often to apply — Internal remedies which aid a cure.

SURFEIT — BUTTON FARCY.—The nature of this disease — Its mild character and easy cure —A different kind of surfeit from a different cause — How to treat this — Internal remedies which are necessary.

GREASE — SCRATCHES.— No trouble to learn the cause — Filthy stables and lack of care — How to treat a simple case — Bad and long standing cases — How difficult to treat — Treatment in last stages.

MALLENDERS, SALLENDERS, AND HIDE BOUND.— Explanation and causes of these diseases — Generally easily cured by a proper treatment — How to treat them.

LICE — HEN LICE ON HORSES — GRUBS.— How to eradicate them — What must be done for presence of hen lice — Remedies that are most successful.

MANGE.

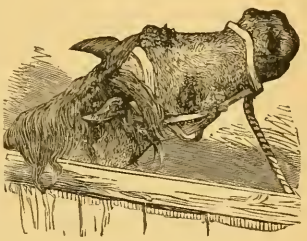
WHAT THIS DISEASE IS.

This is the common itch of the stables, and is more generally developed among horses which have been stinted for food and

neglected in grooming. It is highly contagious, and may spread, by contact, through an entire stable of more pampered horses. It is a minute insect, and resembles the parasite which troubles the human family.

TEST FOR MANGE.

A pretty sure test is to remove by scratching some of the scurf from among the roots of the hair, place it on some white paper, then placing paper and contents in the bright sunlight at noon. If the horse is afflicted with mange, numerous small, bright, shining points will be seen moving about in all directions.



ACTION OF A MANGY HORSE.

ITS LOCATION AND SYMPTOMS.

It first appears among the roots of the mane on the neck, and may afterwards spread over the whole body, with the exception of the legs. The horse is continually rubbing himself against the stall, etc. Patches of hair pull off as the disease spreads, leaving dry, scurvy spots and patches. The skin on these spots thickens and gets scabby, by the constant irritation and rubbing.

TO EFFECTUALLY CURE IT.

The work must be thoroughly done, and no one working around a mangy horse, should approach one unaffected, for two days. If possible, have the horse stand in the hot sun for an hour or more, then thoroughly cleaned and brushed off, to remove all the outside scurf possible. Then apply the following lotion to every part and crevice of the body: —

Carbolic Acid Crystals, two drachms;
Common Glycerine, six fluid ounces;
Water, one quart.—Mix.

The next day after applying the lotion, have the horse thoroughly washed all over in strong soap suds, and in two hours apply the lotion

again. In two days repeat the washing and lotion, as directed above. The glycerine is not absolutely necessary, yet it softens the hair and skin. The carbolic acid alone can be mixed with a quart of lard, and used instead of a lotion, but is not so searching.

PRURIGO.

WHAT ITS CHARACTER IS.

This produces symptoms of intense itching similar to mange. The horse will often leave his food to scratch his neck, wearing off his mane and disfiguring himself. The skin never shows that patchy character peculiar to true mange. It is an irritable condition of the skin, with a feverish condition of the body, and often affects high fed horses in the spring of the year, which have had but little exercise during winter. The following lotion applied to the parts, will give relief: —

Carbolic Acid, one drachm;
Common Glycerine, four fluid ounces;
Water, one pint.—Mix.

Bathe the part twice a day until trouble ceases. Also, give night and morning, the following medicine, which has a peculiarly beneficial action, in diseases of the skin: —

Fowler's Solution of Arsenic, one fluid ounce;
Tincture Muriate of Iron, one fluid ounce and a half;
Water, one quart.—Mix.

Give half a pint at a dose for a week, and give mashes and soft food for the same length of time.

RINGWORM.

PECULIARITIES OF THIS DISEASE.

This is a disfigurement, which sometimes proves troublesome. The hair falls off in patches, leaving a scurfy skin, which scales off, and finally leaves a thick, scaly margin, or ring around the spot, which in time may ulcerate.

ITS TREATMENT.

There are many remedies, but the one given below is the most convenient and effectual, and will not fail:—

Iodide of Lead, two drachms;
Fresh Lard, two ounces.—Mix.

Apply twice a day. Give internally at the same time, the arsenical drink under prurigo. If there has been ulceration, which proves obstinate, apply to the spot six times daily the lotion given below:—

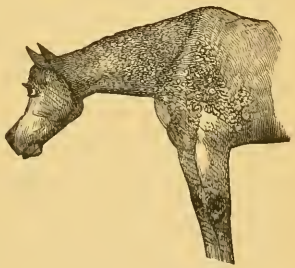
Chloride of Zinc, two scruples;
Water, one pint.—Mix.

This will produce a final cure of a troublesome disorder.

SURFEIT—BUTTON FARCY.

ITS DESCRIPTION AND NATURE.

It is more annoying than dangerous. It makes its appearance suddenly, and seldom involves any portion of the body beyond the neck and fore quarters. It consists of eruptions, or a rash of round, blunt, elevated heat spots, which disappear in a short time. The pulse will be natural if this is the case.



A CASE OF SURFEIT.

TREATMENT OF IT.

But little treatment is necessary

outside of cooling food, such as bran mashes sufficient to prevent costiveness, with green food, roots, or crushed oats. The following medicine, which acts on the skin, should be given once a day for a month:—

Fowler's Solution of Arsenic, one fluid ounce;
Tincture Muriate of Iron, one fluid ounce and a half;
Water, one quart.—Mix.

Give one pint for a dose.

A DIFFERENT KIND OF SURFEIT.

If it should be a young horse, which has been neglected during the winter, it may take a different and constitutional character. The lumps or blotches do not disappear, and exude a fluid from the centre of each point. It may settle on the lungs if neglected.

ITS TREATMENT.

The food should be as prescribed for the other and similar form of the disease. No active exercise must be allowed. The horse must be kept in warm, well ventilated quarters, well clothed, and legs bandaged. Give the arsenical drink as stated in the article above. If it affects the appetite, stop it for a day, and then give it again; or, reduce the dose. It will be slow to treat and cure, and attention is better than much medicine, outside of what we have prescribed.

GREASE—SCRATCHES.

A DISGRACE TO HAVE IT.

There is no trouble in tracing the cause of this disease. It proceeds from filthy stables, which are not cleaned out from one week's end to the other, causing fermentation and putrefaction of the manure. It results from indolence and carelessness of men who never clean the filth and mud from their horse's legs, whose barnyard is one reeking mass of corruption.

WHAT IT REALLY IS.

It is, in its primary stages, an inflammation of the glands of the lower part of the limb, which secretes an oil that keeps the parts soft and pliable, that are most exposed to wet and mud. If neglected, the inflammation gets worse, the hair falls off, the parts crack and ulcerate, discharging an oily substance, hence the name of "grease heel." We show an illustration of the last and worst stage of this disease, which is simply horrible.

LAST STAGES OF GREASE.

ITS TREATMENT DURING ALL STAGES.

In the early stages of this disease, it is easy to remove with a little care. The part should be washed thoroughly with castile soap and water, and kept constantly wet with the following lotion: —

Glycerine, half a pint;
Chloride of Zinc, half an ounce;
Water, six quarts.—Mix.

Apply a cloth wet with the lotion to the parts, and as soon as warm apply another. Keep this up until all heat and inflammation has departed. If good results do not follow, it is because the work has not been thoroughly done.

When it has further advanced, and cracks and ulcerations are present, the above lotion is not strong enough, and the following must be substituted, and used in the same manner: —

Chloride of Zinc, one ounce;
Creosote, four fluid ounces;
Strong Solution of Oak Bark, one gallon.—Mix.

If the case is still worse, and granulations have appeared, the horse must be cast, and the fungoid growths removed one by one with a knife. After removing each one, touch the spot lightly with a hot iron, (not red hot) to sear the surface and prevent bleeding. It is not well to operate on but few of the growths daily. The lotion must be used the same, during the operation, and afterwards. In

cases of this character, it is well to combine constitutional remedies also, and the following should be given: —

Fowler's Solution of Arsenic, one fluid ounce;
Tincture Muriate of Iron, one fluid ounce and a half;
Water, one quart.—Mix.

Give a pint of the above night and morning. The food must be cooling and gentle exercise may be given daily. Often the horse will leave the stable lame, and return hardly showing it. No work should be allowed in worst stages.

Cracked heels are similar, and should be treated in the same way. The first lotion mentioned should be used, and in the same manner for simple cases. Where ulcerations are present the second lotion is recommended. These will soon effect a cure.

MALLENDERS AND SALLENDERS.

These are scurfy patches which affect the back of the knee, and front of hock respectively. If neglected, they may make a troublesome sore.

THEIR TREATMENT,

Is easy, and consists in cleanliness, and the daily application of the ointment below: —

Mercurial Ointment, two drachms;
Pulverized Gum Camphor, one ounce;
Fresh Lard, half a teacupful.—Mix.

Apply a portion twice a day. If the case is more serious and ulcerated slightly, use the second lotion prescribed for "Grease," and keep the parts wet with it.

HIDE BOUND.

NOT A DISEASE BUT A RESULT.

This is not a disease, but a consequence of neglect and exposure, as well as from poor feed, which impair the organs of nutrition.

ITS PLAIN TREATMENT.

An opposite course of care and food from what produced it, will accomplish a cure in time. The recovery will not be so rapid as waste has been. The use of the following remedy will hasten the recovery: —

Fowler's Solution of Arsenic, half a fluid ounce;
Tincture Muriate of Iron, one fluid ounce;
Water, one pint.—Mix.

Give the above dose twice a day.

LICE.

These are sometimes very troublesome, in some stables, and fairly drive the horse frantic with their annoyance. Frequently all known remedies fail to give permanent relief, and it is a mystery where the trouble lies. It often arises from the proximity of the hen-house, which breeds them as fast as they can be exterminated. The relief is to separate the two, when the trouble will disappear without remedies. If a remedy is needed, nothing; is better than the following: —

Carbolic Acid Crystals, one drachm;
Fresh Lard, one quart.—Mix.

Rub over every part of the body, and wash with soap-suds the next day.

GRUBS IN THE SKIN.

These are annoyances which cause bunches to arise on different parts of the horse during the larva state of the grub. The best way to get rid of their presence is to take a sharp-pointed knife and slightly enlarge the opening in the skin, and squeeze them out.

CHAPTER XIV.

MISCELLANEOUS MATTERS.

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TO TELL THE AGE OF A HORSE ACCURATELY.—Deception of dealers—How to become an expert judge—Reliable system by an expert judge—Result of years of inspection—Changes the first year—Alterations in two-year-old form—Unvarying shedding of teeth—A five-year-old mouth—Sure method of judging age from six to nine years—Only reliable method after ten years—Development of groove—From eleven to fifteen years—From fifteen to twenty-four—Miscellaneous points for experts.

FIRING OR ACTUAL CAUTERY, SETONS AND ROWELS.—Benefits of firing if properly applied—Diseases benefited by it—Object in firing—The kind of iron to use, when and how to apply—How hot to have it—Firing for spavins—Cautions about severity of use—The method of using setons and rowels—Their benefits—Their unnecessary use—Their bad results.

TO USE MEDICINES WITHOUT KNOWING DISEASE.—Sizes of doses for horses, cattle, sheep and hogs—What to give if feverish—To deaden pain—To increase strength—To stimulate stomach—To quiet irritability—To build a horse up and improve his appearance—To move bowels instantly—To check dysentery—To act on throat and lungs—To benefit the kidneys—To give by drench, ball or in food—To give harsh remedies—To make any prescription by use of teaspoon or tablespoon.

CARE OF MANE AND TAIL.—To alter carrying tail by an operation—To increase growth of mane and tail—To prevent rubbing of them—To turn mane to either side.

MISCELLANEOUS—CASTRATION OF COLTS.—When to do it—How it alters form—To cure tender mouths—Directions for making a sling for sick horses—To protect horses from flies.

TO TELL THE AGE OF ANY HORSE.

DECEPTION PRACTICED BY JOCKEYS.

Many gentleman who are otherwise connoiseurs in horse matters, are not by any means well informed as to the anatomical changes which take place in the mouth of a horse, and are frequently victimized by dealers who have fitted up an "old stager," and "bishoped" his mouth, often giving a ten-year-old horse a six-year-old mouth. A practiced eye cannot be so deceived. But few men have the time and opportunity to become experts without assistance of some kind.

HOW TO BECOME AN EXPERT JUDGE OF AGE.

In order that people may not be deceived, as well as for the purpose of imparting practical information to those who may wish to become experts in the shortest possible time, we have, at some considerable expense, prepared two pages of illustrations, showing the changes which take place in the mouth of a horse from the age of six months, up to the age of twenty-four years. The drawings were made by an expert, who has made the subject a special study, and has examined thousands of mouths during the last ten years. They represent the average mouth at each stated age. By the study of these illustrations, and the aid of our explanations, any one can become an expert judge of the age of any horse. More can be learned by this method in a few moments, than some men possess by a lifetime of picking up information, ofttimes unreliable.

THE NUMBER AND NAMES OF THE TEETH.

A horse has forty teeth—twenty-four molars, four tushes, and twelve front teeth or incissors. The tushes are generally absent, or imperfectly developed in mares. The teeth are continually growing, which accounts for the change of formation of the mouth and teeth. The tushes are never shed.

GROWTH OF TEETH UP TO ONE YEAR.

At about fourteen days the colt has four front teeth, two above and two below, which we call nippers; at three months, four more

teeth have made their appearance on each side of the nippers, above and below, and are called middle teeth; at six months, four more have grown out on each side, which are called corner teeth; now the colt has a full mouth of temporary front teeth. These colt teeth differ from horse teeth by being shorter, less in size, smooth, and a clean, white color. Horse, or permanent teeth, are larger, yellow, and marked with ridges. Our illustrations show the difference in size.

CHANGES FROM A YEARLING TO A TWO-YEAR-OLD.

At one year, the cups have left the nippers of lower jaw, and are partially worn in middle teeth. At two years, the cups have left middle teeth, and are disappearing from the corner teeth.

RELIABLE RULES FROM TWO TO FIVE YEARS.

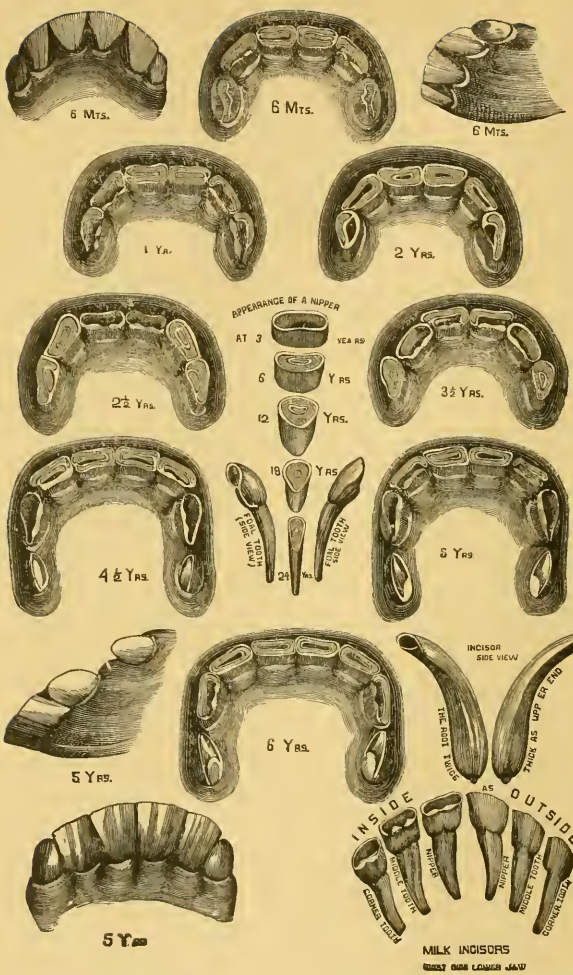
At two and one-half, the front nippers are shed, and in their place appear permanent teeth. At three years, these teeth are grown up even with the others. At three and one-half, the middle teeth are shed, which become full sized at four years. At four and one-half years, the last colt teeth—the corner teeth—are shed, and the tushes begin to appear through the gums.

HOW TO JUDGE AT FIVE YEARS.

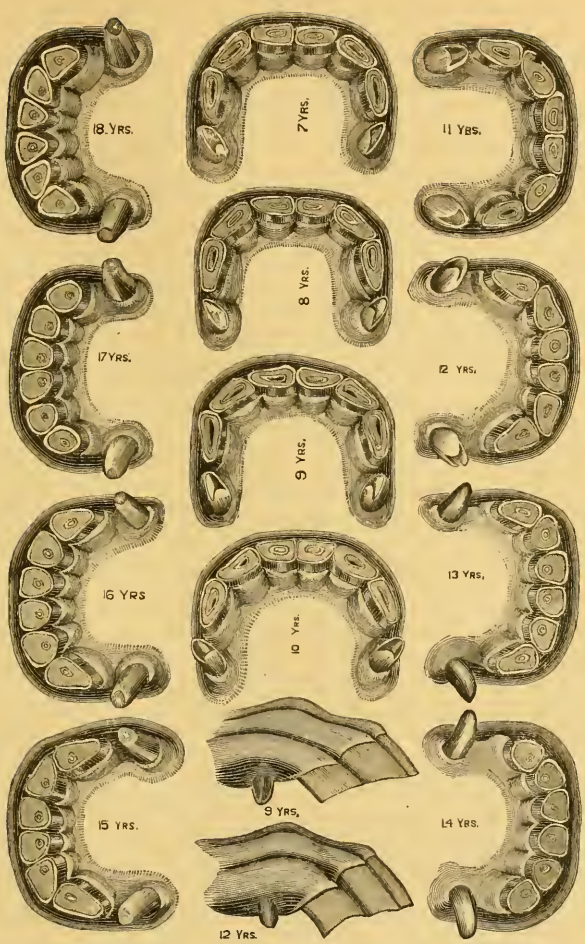
At this date the colt has a full mouth, and his age is determined during the next three years by the wearing down of the lower front teeth, and the consequent disappearance of the black spot or mark upon the surface. The tushes are sharp, and have a groove, as shown by our illustrations. The mark on the corner teeth is long, deep, narrow, and irregular on inside edge.

TO TELL A SIX-YEAR-OLD MOUTH.

The black spot at this period is nearly, if not quite, gone, leaving but a trace in the nippers. The mark is easily seen in middle teeth, but smaller than the mark in corner teeth, where it shows very plainly. The tushes have grown to nearly full height, still have the groove, and but little worn.



THE TEETH FROM SIX MONTHS TO FIVE YEARS. THE NIPPERS FROM THREE TO TWENTY-FOUR YEARS.



CHANGES IN THE MOUTH FROM SEVEN TO EIGHTEEN YEARS

EVIDENT SIGNS OF SEVEN YEARS.

The mark has disappeared from the nippers, and there is but a faint trace of it left in the middle teeth. The corner teeth still show it, yet smaller. The tushes begin to show marks of wear, and are rounded slightly at the point.

CHANGES AT EIGHT YEARS.

The marks have entirely disappeared, excepting in some cases a trace in the corner teeth. The tushes are more rounded at the point, the horse is said to be aged, and except to the initiated and experts, it is a matter of wild guess work after this period.

HOW TO TELL AT NINE YEARS.

Some pretend to be able to judge the age by substituting the upper teeth at this period, in the same manner as we have used the lower teeth. This is a fallacy and cannot be relied on. At this age the marks have entirely disappeared, and the tushes are getting blunt.

AN INFALLIBLE SYSTEM AFTER TEN YEARS.

At this age a groove begins to appear next the gum, on the outside of each upper corner tooth. At twenty-one, this groove has extended from the gum to the bottom of the tooth, consequently, it takes eleven years to grow down, and the extent of the groove will determine the age. Thus, at fifteen years of age, it will be half way down. This method is founded on the regular growth, as well as the conformation of the tooth, and can be relied on as the nearest possible guide to determine the age after ten years.

EVERY YEAR FROM ELEVEN TO FIFTEEN YEARS.

The front teeth from this date commence to alter in form as they wear down, beginning with the nippers. They become rounding in form, instead of being oblong, and are often triangular. The tushes become blunt and extend more outside the jaw. The gums shrink away from the teeth, which project more in front. The jaw alters in shape, as shown in illustration. The groove on corner tooth is well developed, and extends half way down the tooth at fifteen.

EVERY YEAR BETWEEN FIFTEEN AND TWENTY-FOUR.

The same alterations continue, and the groove on the upper corner tooth extends yearly, until twenty-one, when it reaches the bottom. The nipper which at six years was nearly twice as wide as thick, at twelve is about equal in each diameter; at eighteen years, it is once and one-half times thicker than broad, while at twenty-four it is twice as thick as it is wide, as shown by the illustrations. These changes are caused by the wearing off of the tooth, which decreases in size as it grows out, as well as changes in form.

As the animal advances in age his teeth gradually grow long, and appear to become more horizontal. The mouth which, at five years old was cup-shaped, now loses this appearance and becomes elongated. The teeth which were, at the age last mentioned, nearly perpendicular, are now slanting; and this process continues with advancing age. The enamel loses its original beautiful whiteness, and assumes a cloudy or smoky yellow instead, and becomes striated with brown and black marks. After fifteen years the tushes have so worn off as to show the different shade of the pith, which will be a small spot in center.

In order to make this information servicable the plates should be well studied to note the changes, as well as the date of the alterations fixed in the mind. A little practice will soon make any one an expert in the matter. It will be well to remember, also, that as the horse grows older, the hollow deepens above the eyes, and white hairs appear about the eyes and muzzle; there will be a sharpening of the withers, a swaying down of the back, and a sharpening of the border of the lower jaw.

FIRING, OR ACTUAL CAUTERY.

BENEFITS IF PROPERLY APPLIED.

The firing iron becomes a very salutary instrument in good hands, but in the hands of men who are not informed as to the limit

which it can be legitimately carried, it is as dangerous as it is efficacious when properly applied. We have not unfrequently seen animals lame in the shoulder fired on the back tendons, lame in the hip and fired on the hock; and so on. This has the effect of shaking the faith of a good many as to the efficacy of firing; but it should not. Many diseases, which will yield to no other agent, can be subdued by the application of actual cautery, if applied intelligently. All undue severity must not be used.

WHAT IT DOES AND HOW USED.

Firing is performed on horses for two reasons, one being to form a permanent inelastic and unyielding bandage to the part; for instance, in case of cockle-ankle knuckling over. This is accomplished by destroying the elasticity of the skin, and decreasing its surface. The second reason for firing is to create an active inflammation, thereby furnishing the part with more than its normal amount of nutriment, by inducing a flow of blood greater than naturally flows there, and hasten anchylosis. Occasionally it is used for only one of these purposes, and occasionally for both conjointly. If we require excessive nutrition, we fire with the pointed; if to form a tight bandage, the sharp iron, the depth being regulated by the special features of the case; but when we fire deeply with sharp peniform iron, we have both an increase of nutrition and our bandage as the result. When there is a choice, we prefer the sharp-pointed iron, as it will not leave an eyesore, if properly handled, and this fact is a very important one.

OBJECTS INTENDED BY FIRING.

Firing causes an artificial inflammation, which lessens a morbid one already existing, which milder means has been unable to subdue; it also affords a powerful stimulous to the absorbents, which enables them to eliminate injurious deposits, hence we fire for sprains, splints, spavins, etc., of long standing. Where acute or active inflammation exists, under no circumstance should the firing-iron be used. Neither an escharotic, a caustic, a blister, nor even a stimulant should be

used, as such treatment frequently creates new inflammation, or intensifies and increases that already existing. This increase will only partially subside, the result being a chronic thickening remaining, which could easily have been avoided by simply first allaying the primary inflammation.

PARTS APPLIED TO AND HOW TO HEAT THE IRON.

The parts to which we usually apply actual cautery are usually tendonous, ligamentous, or sheaths of the tendons. These parts having a low organization, have not the same sensibility as parts more highly organized. This is, no doubt, the reason when firing, horses seldom require to be thrown, and, do not suffer the amount of pain the operation would seem to indicate. Some, in obedience to the promptings of humanity, imagine that by only partially heating the iron they are causing less pain. This is a mistake, as it would necessitate a prolongation of the punishment without abating it any in intensity. The iron should be heated to a white heat, a sufficient number kept in the fire, which should be close at hand. The assistant should have an iron ready without a second's delay, so that the operator can work rapidly and accurately. In this manner an ordinary firing would not last more than a few minutes, and, as above remarked, the pointed iron should be used whenever practicable. It is better not to throw the animal unless it cannot be avoided, and then due provision should be made in the way of providing a deep bed, in order that when the animal falls, no accident will occur.

DIRECTIONS FOR PREPARATION OF SPOT.

Having decided on firing a given part, first clip the hair off closely, then take either a cantharides or a biniodide of mercury blister and apply, the severity of the application being in proportion to the amount of counter-irritation or inflammation desired. It is advisable to blister before firing. A practice prevails among horsemen of applying grease to a surface lately fired and blistered. This, in a great measure, defeats their own purpose. When an animal has been treated by actual cautery, you expect as one of the results a

transudation of serous fluid through the pores of the skin; but when you apply grease, you fill up those apertures, and compel the liquid to remain inside, which is not desirable. The object in applying the grease is to keep the parts soft, and to prevent the new skin from cracking. By merely bathing the blistered limb or joint in tepid water for an hour or so twice a day, you facilitate the serous disharge, keep the parts soft and pliable, and prevent the skin from cracking; but if there is an unusual tendency to crack, apply a little glycerine.

DISEASES BENEFITTED BY FIRING.

Firing is beneficially employed in the following diseases: Bone, occult, and sometimes blood or bog spavin; old sprains; wrenches; hip-joint disease; splints; knuckling over; cockle ankles; ringbones; sidebones, and for many kindred diseases.

FIRING FOR BONE SPAVIN.

With reference to the manner in which firing should be performed, we will take bone spavin as a typical case. The operation on other parts of the animal will be about the same, being of course modified or intensified to suit the special case on hand. As to the kind of iron to be used, the practitioner will have to use his discretion in the matter. We, however, prefer the pointed one. Take your iron, heated as above recommended; first draw imaginary lines, perpendicularly and horizontally, so as to enclose within the square the portion to be fired; then, presuming you are using the pointed iron, mark out the boundary of the square with dots, then fill the enclosed space with marks, about an inch or less apart, the depth being in proportion to the severity of the disease. If you are using the crescent or peniform-shaped iron, then make a mark from above downwards, in the centre of the place you desire to fire. This line should divide it into two halves. Then commence above, and draw your line from the upper portion of the vertical line downwards and backwards, in a slanting or oblique direction, the slanting lines being about one-fourth of an inch apart. After having been fired, the animal's head should be tied so high as to prevent him injuring

himself by biting the newly-blistered and fired surface. Keep him tied up for three or four days. With respect to the rest the animal should get, it will depend on circumstances entirely, as it varies from two to six months.

CAUTION ABOUT USING.

It should always be borne in mind that severity of application does not increase its benefits. It is not the object to make an extensive sore, or to destroy adjacent parts, or to fire to great depth. Some people have ideas that in order to treat diseases by this method, all that is necessary is to sear and burn until extensive damage is done. This is not the case, and never should be done, as grave results will ensue.

USES OF SETONS AND ROWELS.

DESCRIPTION OF SETONS.

In the management of the domesticated animals in disease, setons are frequently employed. A seton consists of a piece of tape or cord which is passed for some distance under the skin, and allowed to remain to drain away some morbid product.

By some, setons are considered useful in internal disease, but we think this is very doubtful; they are, however, of service in causing the dispersion of chronic swellings, in keeping open fistulous wounds and in causing adhesion of the walls of accidental cavities. They should not be employed, however, in farcy, nor in inflammation of the bowels, nor in other acute inflammatory affections. The use of setons is greatly abused, and they are regarded as a sort of panacea by quacks, who apply them, right or wrong, in every disease. They are often employed with the view of preventing disease, though it would be but rational to defer the application of surgical remedies until the disease had actually appeared.

PERCHERON-NORMAN STALLION, ROMULUS.

DESCRIPTION OF ROWELS.

A rowel is sometimes used instead of a seton, and in this case no needle is required. A straight incision is made with a knife so as to cut through the skin and having separated the skin from the tissues beneath by passing one of the fingers round on either side of the wound, a circular piece of leather two or three inches in diameter is introduced between the skin and flesh.

The effect of a rowel or seton may be increased by smearing it with turpentine, euphorbium, black hellebore, etc., though care should be exercised in using irritants, as they are apt to cause sloughing when intense inflammation is produced.

Setons may be employed to advantage in the treatment of splints and spavins, though the operation needs to be performed with skill and care in order to leave no blemish, and to be unattended with other injurious consequences.

HOW THEY ACT.

Setons produce swelling at first, and suppuration is established the third or fourth day after their insertion. It is necessary to use precautions to prevent animals from licking or biting setons. They may be removed at the end of a fortnight. Serious accidents occasionally follow the application of setons, such as hemorrhage, extensive swellings, traumatic gangrene, small abscesses and indurations, so they should not be resorted to unnecessarily.

CASTRATION OF COLTS.

Every farmer who raises domestic animals ought to understand what effect castration of a young male animal is likely to have on the proper development of certain good points, as well as what the effect will be on other points if he is not castrated. By performing this operation at a certain period, or by delaying it a few months, or a year or more, results can be secured in developing a good form and symmetry in some animals, which never could be effected by any other means.

THE PROPER TIME FOR GELDING.

The time of gelding the colt makes a great difference in the shape of the mature horse. The usual time is when the colts are a year old, without reference to their points. There are at least some views, in which all good horsemen agree, as to the *effects* on the development of certain *points* of the colt, as well as on his *disposition*. In some special cases the castration of colts should be deferred until they are three years old; while others should be gelded at that particular period in their growth, which will favor the more perfect development of certain points of form and symmetry. This occurs sometimes at the age of a few months, a year, two years, or more. It is quite difficult to lay down practical directions on this point. To be able to decide when a colt should be castrated, requires observation on the subject for many years.

HOW IT CHANGES THEM.

Gelding renders colts heavier behind, and narrower and lighter forward. When a colt is so fearless and willful that there are fears of his becoming vicious, immediate castration will check the further development of such disposition. When a colt is very narrow across the breast, and has a small neck and head, unless he manifests a very refractory disposition, it may be well to defer gelding until he is even three years old, in order to improve his form and style. Colts usually make faster travelers for short distances, if gelded when not more than a year old, than if it be deferred; but their powers of endurance are less. Stallions that have been kept for several years, and then altered, are rendered much slower in gait; and those that were difficult to manage, are usually rendered much more tractable. Entire horses are usually fearless, and not apt to shy at rustling sounds or strange objects; but colts that are gelded very young, if their dams shy at unfamiliar objects, will be liable to lack courage, and be always ready to sheer off at the sight of black stumps and such things, or to run away whenever any part of the harness or carriage becomes deranged, which tendency can rarely be counteracted except by the most careful and patient training. Colts should

never be castrated when poor or sickly, or in stormy weather, unless they are kept in a comfortable stable until they are entirely healed, as danger of inflammation arises from being exposed to cold storms and chilling winds. Many times when the wound appears nearly healed, a colt will swell up and die, in spite of all efforts to save him. Farmers cannot be to careful in keeping horses, after castration, in warm stables.

CARE OF THE MANE AND TAIL.

A horse may sometimes become habituated to carrying his tail on one side, a very annoying trait. It can very easily be remedied by a slight surgical operation, which divides the muscles on the inner side of the curve of the tail, and tying it over toward the opposite side until it begins to heal. Divide only the superficial muscles.

TO THICKEN THE MANE AND TAIL.

Common kerosene oil thoroughly rubbed into the roots once a week will do it. In rare cases, on animals of exceedingly sensitive skin, it acts like a blister, and has taken the hair off, being too powerful. In cases of this kind it is better to mix it with equal parts of sweet oil, or to substitute mercurial ointment, which is another excellent remedy. The mane and tail should be thoroughly washed with Castile soap and warm water once a week.

RUBBING THE MANE AND TAIL.

To prevent this annoying habit, wash the tail and mane occasionally with warm soap-suds, and apply a lotion composed of a fluid ounce of sulphuric acid in a quart of water, with a sponge, two or three times each day. Notice if the trouble is caused by hen lice.

TO TURN THE MANE ON EITHER SIDE.

When this is desired, it can easily be done by turning it to the side wished, and daily wetting and brushing it, followed by weighting it with sheet lead to hold in place. A few weeks will affect the change.

HOW TO USE COMMON MEDICINES.

DOSES FOR THE HORSE, CATTLE, HOGS AND SHEEP.

Below we give, in a classified form, the medical properties of common remedies nearly always at hand, with size of dose for different domestic animals, so that one may be substituted for the other in an emergency:

REMEDY.	FOR HORSES.	FOR CATTLE.	FOR HOGS.	FOR SHEEP.
FEBRIFUGES—TO ALLAY FEVER.				
Tincture Aconite	20 to 30 drops.	30 to 40 drops.	2 to 4 drops.	3 to 5 drops.
Dovers Powders	3 drachms.	3 to 4 drachms.	1 scruple.	2 scruples.
Saltpeter	6 to 8 drachms.	1 ounce.	1 drachm.	1 to 2 drachms.
NARCOTICS—TO DEADEN SENSE OF PAIN.				
Morphine	3 to 5 grains.	5 to 10 grains.	½ to 1 grain.	½ to 1 grain.
Laudanum	1 to 2 ounces.	2 ounces.	1 to 2 drachms.	2 to 3 drachms.
Extract Belladonna	2 drachms.	2 to 3 drachms.	½ drachm.	½ drachm.
STIMULANTS—TO OVERCOME PAIN AND RESTORE STRENGTH.				
Carbonate Ammonia	2 to 4 drachms.	4 to 6 drachms.	½ drachm.	½ to 1 drachm.
Sulphuric Ether	1 to 2 ounces.	2 to 3 ounces.	½ to 1 drachm.	1 to 2 drachms.
Sweet Spirits Nitre	1 to 2 ounces.	3 to 4 ounces.	2 to 3 drachms.	3 to 6 drachms.
Turpentine	1 to 2 ounces.	1 to 2 ounces.	1 drachm.	1 to 2 drachms.
Assafœtida	2 drachms.	4 drachms.	½ drachm.	½ to 1 drachm.
Aromatic Ammonia	1 to 2 ounces.	2 to 4 ounces.	½ ounce.	½ to 1 ounce.
LOCAL STIMULANTS—TO ACT ON STOMACH.				
Anise Seed	1 ounce.	1 to 2 ounces,	2 drachms.	2 to 4 drachms.
Cayenne Pepper	2 to 3 drachms.	2 to 4 drachms.	¼ to 1 scruple.	1 scruple.
Ginger	1 ounce.	2 ounces.	2 drachms.	½ ounce.
Oil Peppermint	20 drops.	20 to 30 drops.	5 drops.	5 to 10 drops.
SEDATIVES—TO QUIET NERVOUS IRRITABILITY.				
Bromide Potassium	½ ounce.	1 ounce.	1 drachm.	2 drachms.
Borax	2 to 6 drachms.	½ to 1 ounce.	½ drachm.	½ to 1 drachm.
Gum Camphor	1 to 2 drachms.	2 to 4 drachms.	1 scruple.	1 scruple.
Veratrum	1 scruple.	½ to 1 drachm.	5 to 8 grains.	5 to 10 grains.
TONICS—TO INCREASE STRENGTH AND APPEARANCE.				
Carbonate of Iron	2 to 4 drachms.	2 drachms.	½ drachm.	1 drachm.
Iodide of Iron	½ to 2 drachms.	1 to 2 drachms.	10 to 20 grains.	15 to 30 grains.
Quinine	20 grains.	20 to 30 grains.	5 to 10 grains.	6 to 10 grains.
Common Salt	1 to 2 ounces.	2 to 4 ounces.	1 to 3 drachms.	2 to 4 drachms.

NERVE TONICS—TO INCREASE ENDURANCE.

REMEDY.	FOR HORSES.	FOR CATTLE.	FOR HOGS.	FOR SHEEP.
Strychnine	1 to 2 grains.	1 to 3 grains.	½ grain.	½ to 1 grain.
Nux Vomica	10 to 30 grains.	20 to 40 grains.	5 grains.	5 to 15 grains.
Arsenic	5 grains.	5 to 8 grains.	½ grain.	1 grain.

POWERFUL PURGATIVES—TO MOVE BOWELS QUICKLY.

Croton Oil	15 to 20 drops.	20 to 30 drops.	3 to 5 drops.	5 to 8 drops.
Castor Oil	1 pint.	1 to 2 pints.	2 to 4 ounces.	3 to 4 ounces.
Barbadoes Aloes	4 drachms.	....	....	....
Calomel	1 drachm.	1 to 2 drachms.	1 scruple.	1 to 2 scruples.
Glauber Salts	1 to 2 pounds.	1 to 2 pounds.	2 to 4 ounces.	6 ounces.

LAXATIVES—TO MOVE BOWELS MODERATELY.

Linseed Oil	1 to 2 pints.	1 to 2 quarts.	4 to 6 ounces.	½ pint.
Olive Oil	1 to 2 pints.	2 to 3 pints.	2 to 4 ounces.	3 to 6 ounces.

ASTRINGENTS—TO CHECK DIARRHŒA AND DYSENTERY.

Oak Bark	1 ounce.	2 to 4 ounces.	2 to 3 drachms.	4 drachms.
Alum	2 to 3 drachms.	3 to 4 drachms.	½ drachm.	½ to 1 drachm.
Blackberry Root	2 to 4 drachms.	½ ounce.	1 scruple.	2 scruples.
Lime Water	4 to 5 ounces.	4 to 8 ounces.	1 ounce.	1 ounce.

VERMIFUGES—TO EXPEL WORMS.

Turpentine	2 ounces.	2 to 3 ounces.	2 to 3 drachms.	4 drachms.
Santonin	½ to 1 ounce.	1 to 2 ounces.	1 to 3 drachms.	2 to 4 drachms.
Areca Nut	1 ounce.	1 ounce.	2 drachms.	3 drachms.

ALTERATIVES—TO PURIFY THE BLOOD.

Iodide of Potassium	½ to 1 drachm.	1 to 2 drachms.	1 to 2 scruples.	3 scruples.
Arsenic	5 grains.	5 to 8 grains.	½ grain.	½ to 1 grain.

EXPECTORANTS—ACT ON THROAT AND LUNGS.

Cherry Bark—Wild	½ ounce.	1 ounce.	2 scruples.	2 to 3 scruples.
Sulphur	3 to 4 ounces.	5 to 6 ounces.	1 to 2 ounces.	2 ounces.
Tar	½ to 1 ounce.	½ to 2 ounces.	½ ounce.	½ ounce.

DIURETICS—STIMULATE THE KIDNEYS.

Colchicum	½ to 1 drachm.	1 to 2 drachms.	½ scruple.	½ scruple.
Extract of Dandelion	1 to 2 ounces.	2 ounces.	2 drachms.	3 drachms.
Saltpeter	6 to 8 drachms.	1 ounce.	1 drachm.	1 to 2 drachms.
Resin	4 to 6 drachms.	½ to 1 ounce.	2 drachms.	2 to 4 drachms.

HOW TO MEASURE MEDICINES.

We give below directions by which any prescription can be measured and prepared at home by the use of a teaspoon or tablespoon:

A teaspoonful of liquid is equal to a fluid drachm.

A teaspoonful of powdered roots or barks is equal to two scruples.

A teaspoonful of powdered herbs is equal to one scruple.

A teaspoonful of salts, saltpeter, sulphur, or like articles is equal to half a drachm.

A teaspoonful of metalic remedies, sugar of lead, sulphate of zinc, chloride of zinc, etc., is equal to one and one-half drachms.

A tablespoonful of liquid is equal to half a fluid ounce.

A tablespoonful of powdered roots or herbs is two drachms.

A teacupful is four fluid ounces, or a quarter of a pint.

Three scruples make a drachm; eight drachms make an ounce; twelve ounces make a pound.

DIRECTIONS FOR ADMINISTERING.

The above remedies can be administered in the form of a drench by adding a pint of water; or a ball, by mixing with linseed meal and molasses, and making a roll half an inch in diameter and two inches long, giving as directed below. Harsh remedies should always be given in water, gruel, or beat up with an egg. To make a horse eat medicine in a mash or in grain, take some of the medicine and rub the horse's nose with it before you allow him to smell of the grain; the smell of the medicine on his nose deceives him, and he will eat the grain without any trouble.

GIVING A BALL.

Stand on the right side, holding the tongue, which has been carefully withdrawn from the mouth, with the left hand, on the left side, firmly; place the ball between the ends of the first and second fingers, lengthwise, pass it rapidly along the roof of the mouth, and deposit it as far back as possible on the roots of the tongue; at the same time let go of the tongue with the left hand, and it will carry the ball into the passage to the stomach. Practice with a ball of linseed meal.

TO MAKE A SLING.

To make an ordinary sling, take two yards of sail cloth about two feet wide; at each end sew in firmly a piece of wood two feet long, made round, and one and one-half inches in diameter; to the centre of each stick fasten a ring, to which make fast a small block and tackle; adjust the sling to the horse by means of an ordinary breast collar and hold-back, which may be fastened to the canvas by rings; the blocks should be made fast to strong beams above, about six feet apart. In placing the animal in the sling, it should be so adjusted as to give him rest, without interfering with respiration, as well as to allow him to either stand on his legs or have his weight supported. In many diseases the aid of the sling is indispensable.

REMEDY FOR TENDER MOUTHS.

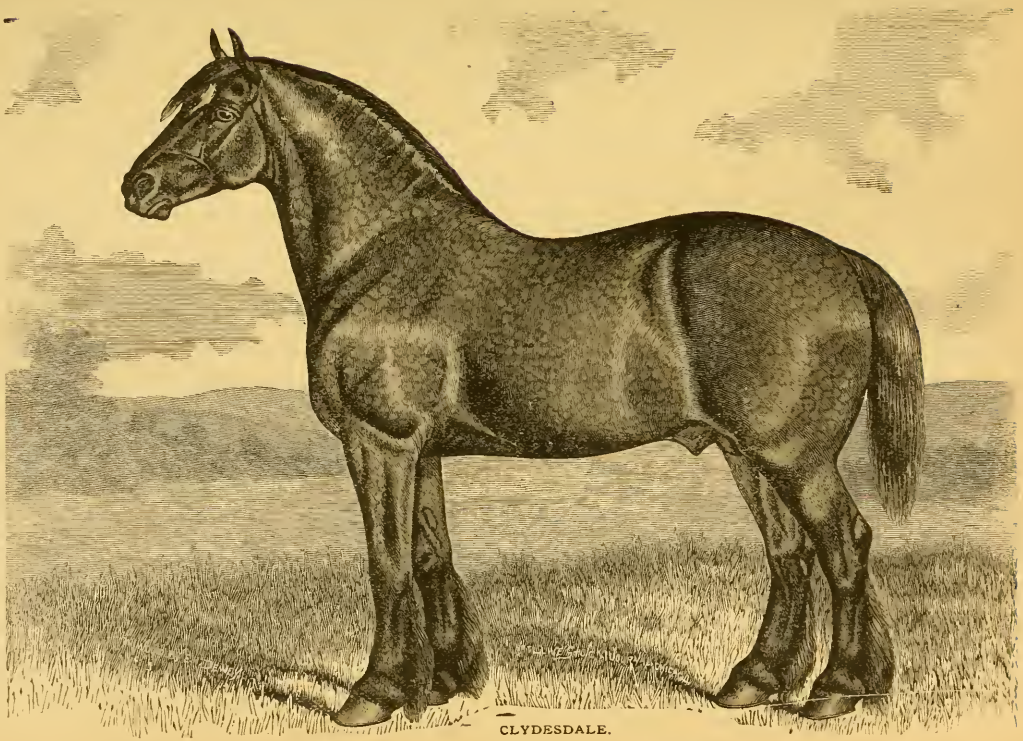
Some horses will always be exceedingly tender in the mouth, while others are almost unmanageable. The corroding of the iron bit in the mouth of a thin-skinned, high-strung animal, will somtimes produce canker. The headstall may be so tightly buckled up as to cause tenderness and a sore mouth. The tight check-rein is another source of this trouble.

The best means of cure is to prevent the evil by the proper length of rein and bridle, and keeping the bit silver-plated; or, the bit may be covered with a firm piece of calfskin, the seam being on the lower side of the bit. A rubber-covered bit will often relieve the trouble. A lotion of an ounce of tannic acid in a pint of water, applied daily to the excoriations, will often produce a cure, and at the same time toughen the skin of the mouth.

TO PROTECT HORSES FROM FLIES.

A French chemist has discovered a way to protect horses from attacks of flies. His invention consist in rubbing the horses, especially the parts most subject to attack, with a little concentrated oil of laurel. There is not the slightest danger in its use and the cost is small. Another excellent remedy is made as follows: assafœtida, one pound; vinegar, half a pint; water, one pint. If horses be well washed with this, not a fly will settle upon them, as the assafœtida will drive them away. This drug has no deleterious qualities as an external application, and may be used unhesitatingly.

Take the common smart weed and make a strong decoction by boiling in water. When the infusion is cold, apply to the legs, neck, and other parts of the body with a brush or sponge. Neither flies or insects will trouble them for twenty-four hours afterwards.



CLYDESDALE.

PART II.

HISTORY, BREEDING AND TRAINING.

CHAPTER I.

HISTORY OF BREEDS, TROTTING FAMILIES, AND PERFORMANCES.

CONTENTS OF CHAPTER.

MUSTANG PONY AND CANADIAN HORSES.—When imported—Characteristics—Origin of new varieties—Mingling of breeds.

PERCHERON-NORMAN, CLYDESDALE, AND AMERICAN DRAFT.—The first importations—Crossing of breeds—Peculiarities and fitness for work—Origin and former uses by knights of olden times.

THE AMERICAN TROTTER.—History and pedigree of first ancestor—Variation from thoroughbred form—Messenger's sons—Their descendants—Origin of the Hambletonians—Mambrinos—Morgans—Blackhawks—Bashaws. Clays and Patchens—Bellfounder blood—Addition of Duroc and Star strains—The Royal George family—The pacing element—The Columbus family, Pilots, Copperbottoms, Red Bucks, Swigerts, Cadmus family, Blue Bulls, Hiatogas, etc.

RECORD OF TROTTING PERFORMANCES.—The first race—Performances of Albany Pony, Top Gallant and Betsy Baker—Twenty miles an hour—Change of custom to mile heats—The best time made up to 1834—Lady Suffolk's extraordinary time in 1849—Careers of Flora Temple, Dexter, and Goldsmith Maid—Marvelous performances of Rarus—Will it be beaten?—Steady increase of trotters from 1872 to 1878—Average time made in 1866 and 1872.

HISTORY OF DIFFERENT BREEDS.

THE MUSTANG, OR MEXICAN PONY.

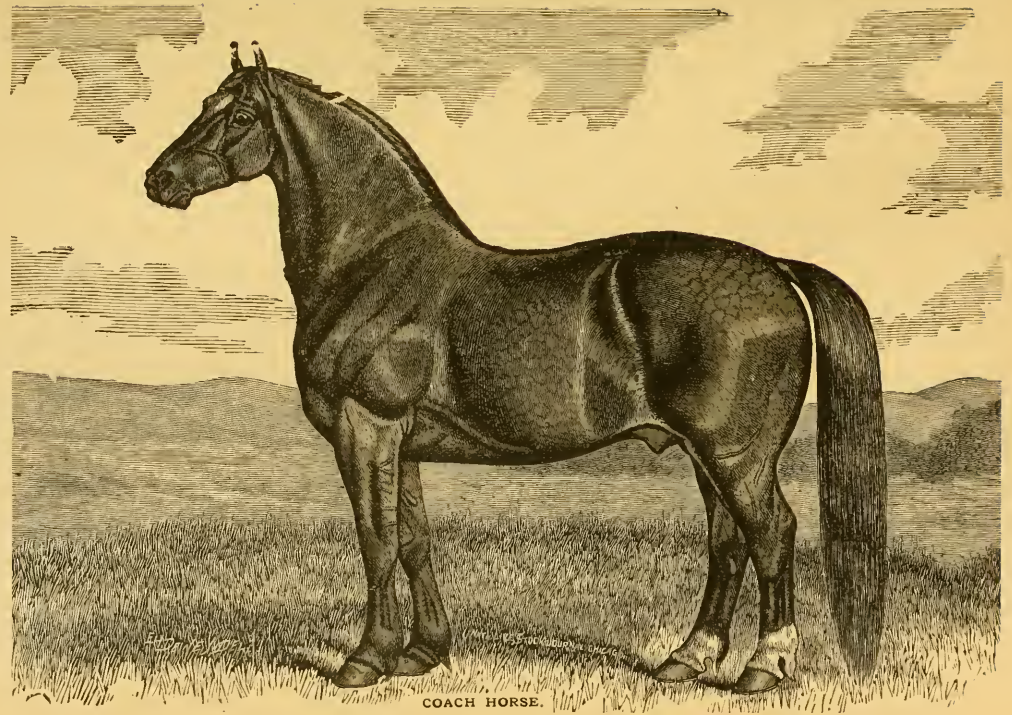
This breed is doubtless of Spanish origin, and resembles the Spanish Barb as he was described at an early day. Their marks, disposition, and general characteristics bear unmistakeable evidence of their genealogy. The Spanish horses escaped in the wars with Mexico; and were abandoned by the adventurers who failed in prospecting for gold and silver. The exploring expedition of De Soto, who discovered the Mississippi and it tributaries, must also have abandoned their horses, from the critical situation in which they were placed at the death of their commander.

THE CANADIAN HORSE.

This breed is of Norman descent — brought over from France by the first settlers of Canada. They were bred pure for many generations, and possess the general characteristics of the Norman, without degeneration or any material change, excepting that from the cold climate and scanty fare on which they have been raised, they have become somewhat smaller than their Norman ancestors. They were the first draft horses bred on the Western continent, and have spread over the United States. They have proved a valuable acquisition for agricultural purposes, and as a general-purpose animal are unsurpassed by any other breed. They stand from 14½ to 15½ hands high; possess an iron constitution, with strong muscled quarters; large bone, in proportion to size; sound feet and legs, free from spavins, ringbones, or other hereditary defects. They are active, keep easy, and grow fat at hard work. They perpetuate their strong points and leading characteristics to their issue, and when crossed with the high-bred trotter increase the bone and improve the breed.

THE AMERICAN DRAFT HORSE.

The draft horse was imported into North America from Europe. They are a combination of German, French, and English breeds. The Suffolk Punch was introduced from England. They are a cross



COACH HORSE.

of Flanders and Norman stock. Their gigantic form is composed of too much flesh for the bone. Their enormous weight tires out the legs in carrying about the cumbersome mass of flesh. The Duke of Hamilton, in southwest Scotland, conceived the idea of a more active horse with equal strength. He crossed Lanark mares upon Flanders stallions, and succeeded in lightening the weight of the old Suffolk Punch without diminishing the bone—retaining their strength to move loads without carrying useless weight. He produced the famous Clydesdale, a very superior breed for active draft purposes. This class has been imported and bred in the United States to a considerable extent.. The cross has been found to be very useful for agricultural purposes and other business pursuits.

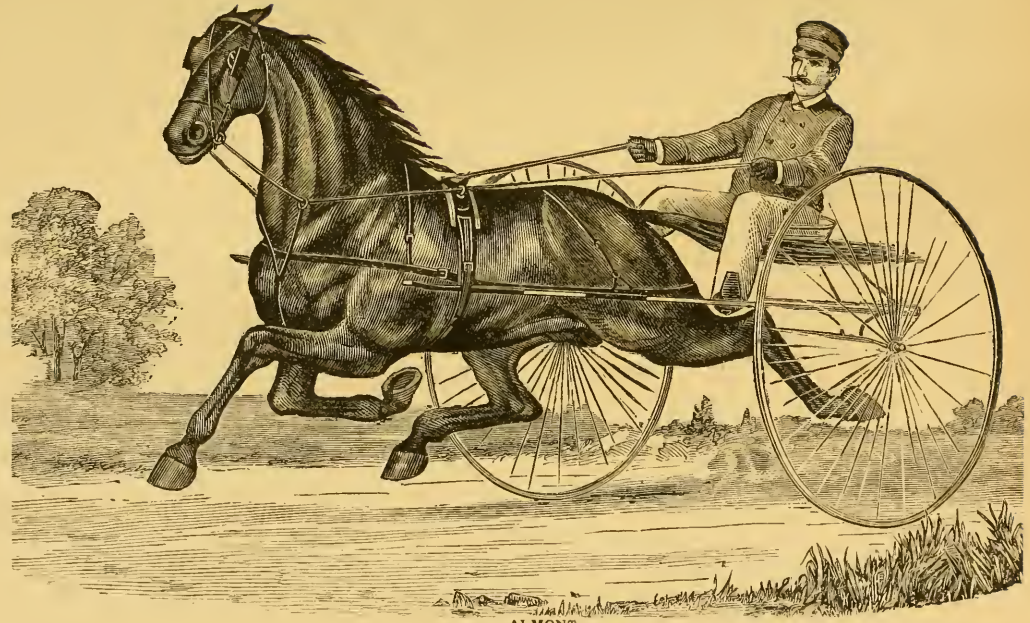
THE PERCHERON-NORMAN.

The Percheron is an improved variety of the old Norman war-horse used by knights in early days, and is a native of La Perche, in the northwestern part of France. They stand from 15 to 16½ hands high, and are almost always grey. They are strong built, with heavy shoulders and powerful hindquarters. They have remarkably large joints; sound, big bony legs, and excellent feet. They are claimed to be a cross between the Arabian and the old Norman draft horse. The Department of La Perche has long been celebrated for superior horses. Its experts in breeding would naturally seek to get the activity of the Arabian and retain the strength of the Norman. This could be effected by crossing a particular kind of the Arabian stallion with Norman mares. It has been estimated by those engaged in the business, that several hundred Percheron stallions have been imported into the United States within the last two years. As this breed possesses most of the qualities of strength and activity, and the form to use these gifts to better advantage than any other breed, it follows, as the effect of that cause, that in a few years we shall be in the possession of a very superior class of work-horses. In regard to the origin of the Norman war-horse, from which the Percheron sprung, there is nothing positively known. They have existed in France for centuries, and have a fixed type that must have been bred in the

family for many generations, because it stamps its impress so faithfully upon their offspring. The Normans have formed the basis of every draft horse that has existed in Europe or America since the foundation of the breed.

AMERICAN THOROUGHBREDS.

This breed was imported from England, and came down from the Oriental steeds of the desert. Spark, presented by Lord Baltimore to Governor Ogle, of Maryland, was the first introduction of the high-mettled racer into the United States. Governor Ogle soon after imported Queen Mab, by Musgrave's grey Arab. About the same time Colonel Tasker imported Selina, by Godolphin (Arabian), and Colonel Colville brought over the Atlantic, Wilkes' old Hautboy Mare. Colonel Taylor, of Virginia, imported Jennie Cameron and Routh's Crab. In 1747, Monkey, by the Lonsdale bay Arab, was landed upon the western slopes of the Atlantic, at twenty-two years old, followed the next year by Jolly Rogers, by Roundhead, out of a Partner mare. Fearnaught, son of Regulus and Silvertail, was imported in 1764. Morton's Traveller, by Partner, completed the list of blood-horses imported prior to the War of Independence. After the close of the war, many celebrated stallions—winners of the Derby, St. Leger, and Oaks—were brought over from the mother country to be bred with the old stock that first dedicated the race-course in America to the patrons of breeding. These capital stallions laid the foundation of the four-mile racer. Their descendants have proved their inheritance by running four miles in the fastest time ever recorded in the annals of racing. Our soil and climate must be well adapted to raise long-distance flyers. The American thoroughbred and the trotting horse have both surpassed the fleetest horses in the world—in the time test—over a distance of ground. Their record stands out in bold relief—flaunting defiance to the world—claiming superiority over the flyers of all nations for endurance and speed.



ALMONT.

THE AMERICAN TROTTER.

"Blood will tell" in the breeding and development of the trotter, as is conclusively shown by the history of the origin of the different trotting families. It is a fact beyond all dispute, that nearly all trotters of any degree of speed, trace back to some recognized strain of blood, and while there may be exceptions, where no definite traces can be made, yet the presumptions are that the pace came by inheritance and not by chance. Such are the laws of heredity. This being the case, it is interesting to study the origin of the numerous trotting families and their branches, in America, and follow their record of increase and development.

THE FATHER OF TROTTERS.

The founder of nearly all our trotting families was the imported horse Messenger, brought from England in 1788, and landed at Philadelphia. The lineage of this noble sire traces back in the male line to the Darley Arabian, the sire of Flying Childers, but with the suspicion of an out-cross through his great grandsire Sampson. On the side of his dam the strain reaches Cade, by Godolphin Arabian.

All accounts concur in representing Messenger as being a horse of very superior, though not of handsome form, and possessing extraordinary power and spirit. Three other horses imported at the same time, had to be assisted and supported from the ship, while Messenger, with head up, tail extended, charged down the plank, carrying a negro on each side, whose combined strength failed to check him until he had trotted some distance up the street.

His color was grey, which became lighter with age; was fifteen hands, three inches in height, with a large, bony head, and a rather short, straight neck. His windpipe and nostrils were nearly twice the usual size, while his withers were low, and shoulders upright, but deep and strong. His loins were strong, and the quarters were very muscular, while his hocks and knees were unusually large, yet the cannon bones were flat and clean. He carried his legs under him, and was always ready for action.

This description shows but little of the form of the thoroughbred, yet is typical of the form of his trotting descendants. This form, as well as the extraordinary vitality and endurance peculiar to him, he impressed upon his progeny, which being persistently driven and trained to trot, became more intensified and habituated regarding gait, until we have as the result of this skill of man and this strain of blood, the final development of the "trotting horse of America," unrivalled and unapproached in his achievements on the turf.

Messenger died on Long Island, in 1808, at the age of twenty-eight, and stood for fifteen years in the vicinity of New York City. The roadsters and trotting horses throughout that section show the impress of his blood.

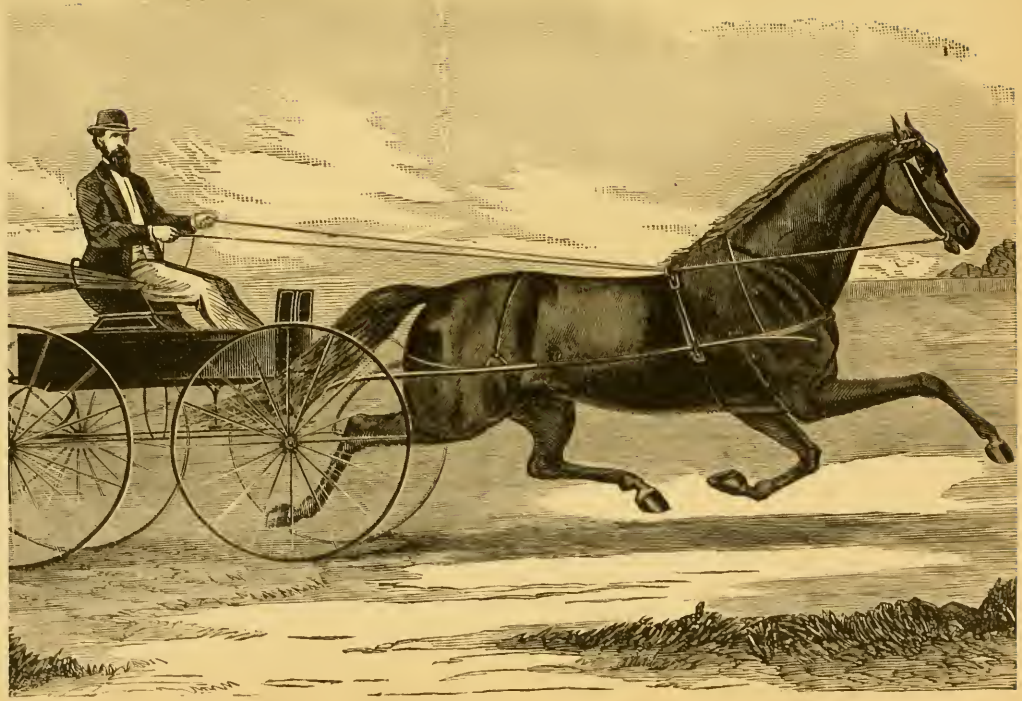
PROMINENT SONS OF MESSENGER.

The following were the prominent sons of Messenger to whom we trace many pedigrees: Mambrino, Bishop's Hambletonian, Ogden's Messenger, Engineer, Commander, Winthrop Messenger, and Mount Holly. Some of his daughters have contributed to the different families qualities which have given them prominence. The granddam of Young Bashaw, the source of the Bashaws and the Clays, was a daughter of Messenger. We will trace some of the sons and their descendants to more modern times, commencing with

MAMBRINO'S DESCENDANTS.

Abdallah.—Of this King of stallions, "rough to look at," a son of Mambrino out of the mare Amazonia, and grandson of Messenger, too much cannot be said. In life he was not appreciated: in fact, was so neglected as to yield no profit in the stud, and was sold for thirty-five dollars to a fisherman, who, not being able to work him on account of his temper, allowed him to starve to death. His greatest laurels were reaped years after in the honors bestowed on his son. During late years his blood has been highly prized in pedigrees, either through male or female line.

Rysdyk's Hambletonian.—This son of Abdallah was the greatest progenitor of trotters the world ever saw. He was foaled in 1849 and died in 1876. His dam was by imported Bellfounder, and his second



VOLUNTEER.

dam by Hambletonian, son of Messenger, and third dam by Messenger. Thus he possessed Messenger blood on side of dam as well as sire. He sired 1,325 colts, and his services paid his owner over $100,000. Among his sons that have made a reputation are the stallions Volunteer, Alexander's Abdallah, Messenger Duroc, Happy Medium, Jay Gould, Walkill Chief, Geo. Wilkes, and Edward Everett; while the trotters Dexter, Nettie, Gazelle, Mattie and others are found among the low records. He was the grandsire of Goldsmith Maid, Rarus, Gloster, Judge Fullerton, Almont, Great Eastern, Bodine, Powers, Dame Trot, etc. A complete list would fill a volume.

Mambrino Paymaster.—This is another son of Mambrino, and was the sire of Mambrino Chief, out of a supposed Messenger-Duroc mare. Mambrino Chief was the sire of Lady Thorn, Mambrino Patchen, Mambrino Pilot, Ericsson, Bay Chief, North Star Mambrino, Woodford Mambrino and others.

Almack.—This horse was a son of Mambrino also, and was the founder of the Champion family, starting with Grinnell's Champion.

DESCENDANTS OF BISHOP'S HAMBLETONIAN.

This is another son of Messenger and was the sire of

Harris' Hambletonian. — This horse was not only a sire of some celebrated trotters in his day, but his descendants are found among the low records. His blood is interwoven with the Blackhawks of Vermont, where he stood for years.

DESCENDANTS OF OTHER SONS OF MESSENGER.

Engineer was grandsire of Lady Suffolk and Dutchman of the early trotting days. From Winthrop Messenger came a majority of the trotting stock in Maine. Ogden's Messenger is popularly supposed to be the sire of Tippoo, the ancestor of the Royal George family.

HISTORY OF THE MORGAN FAMILY.

The horse owned and bred by Justin Morgan has generally been recognized as the founder of the Morgan family. He was sired by

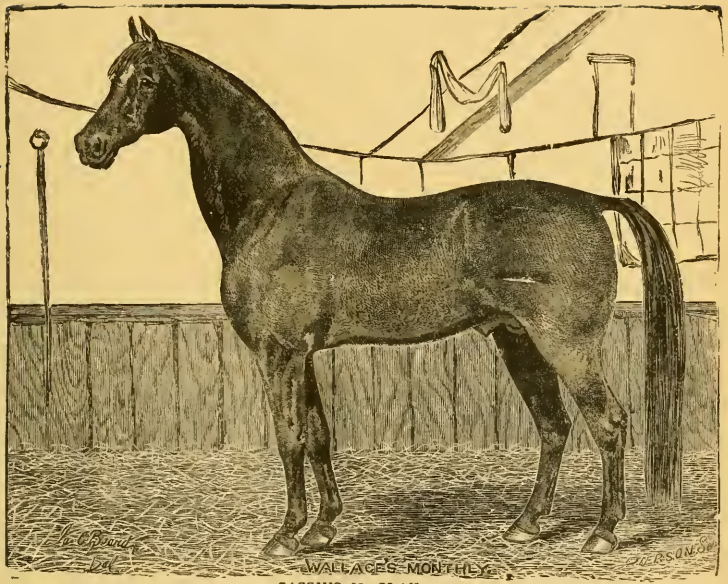
True Briton, a horse rode by General Delancy in the Revolutionary war. True Briton was got by Traveller, owned in New Jersey (probably Lloyd's Traveller), out of Gen. Delancy's race mare. Justin Morgan was foaled in Springfield, Massachusetts, in 1793, and taken to Randolph, Vermont, in 1795, where he became celebrated as the sire of the finest horses in Vermont. He was extensively patronized, and left a numerous and valuable progeny. Among his sons that became distinguished for their stock were Woodbury Morgan, Bulrush and Sherman Morgan.

Sherman Morgan was out of a chestnut mare. He was probably the best son of Justin Morgan. He perpetuated the blood of his sire through a long and illustrious line of trotters. He was the sire of Vermont Blackhawk, whose blood courses through the veins of a long list of northern champions that have become distinguished on the trotting course. Blackhawk was the sire of Lancet, Ethan Allen, Sherman Blackhawk, Belle of Saratoga, and Flying Cloud; many renowned flyers of the present day trace their pedigrees to Hill's Blackhawk. Many of his sons were sold at high prices on account of their inheritance, and proved successful progenitors in the stud.

Ethan Allen was the most distinguished of all the sons that came down from the loins of Blackhawk. His brilliant career on the turf gave him a record, with running mate, of one mile in 2:15; but his fame in the stud far eclipsed his successful career on the turf. He was the sire of Honest Allen, Billy Barr, Hotspur Pocahontas, Fanny Lee, Fanny Allen, Warwick, and Daniel Lambert, together with other great heroes and heroines that have achieved imperishable records of speed on the turf.

Sherman Blackhawk was another son of Sherman Morgan, and possessed through his dam, a cross of Messenger blood.

Vermont Hero, another son of Sherman Morgan, out of a mare by Harris' Hambletonian, was the sire of the celebrated stallion General Knox, out of another Hambletonian mare. General Knox possessed more Messenger blood than Morgan, and his progeny show it by their records.



CASSIUS M. CLAY.

Woodbury Morgan was a famous saddle horse. He was celebrated as a sire of steeds suited for martial display in military parades, which found ready sale on account of their proud demeanor, beautiful form, and graceful action. He was also the sire of the trotting horse Morgan Cæsar, who was the sire of Mack, Pizarro, and other trotters of great distinction. Woodbury also sired Morgan Eagle, the sire of Lady Sutton, and grandsire of Magna Charta, who got Henry (erroneously claimed for Henry Lathrop), Young Magna, Gifford Morgan, and others known to fame.

Bulrush may be said to be the founder of the Morrill family, which came into notice after it obtained a cross of Messenger blood through the dam of Old Mórrill. Among the trotters that come down from this cross of Bulrush and Messenger blood, that are found in the long catalogue of winners, are Young Bulrush, Morrill Prince, Winthrop Morrill, Mountain Maid, Fearnaught, Blanche, Draco, Draco Prince, Champion Morrill, and a host of others that have secured an indelible record in the annals of the race-course. The dam of Bulrush Morgan was reputed to be of French extraction, and some credit may be due to this cross for the powerful constitution that has given great force of character to this family.

The Golddusts of Illinois are a branch of the Morgans, being from Vermont Morgan, grandson of Gifford Morgan.

HISTORY OF THE BASHAW AND CLAY FAMILIES.

The Bashaws are descended from an imported Arabian stallion. Grand Bashaw was imported from Tripoli in 1820, and sired Young Bashaw. Neither Grand Bashaw nor his son, Young Bashaw, ever acquired any reputation as trotters, but Andrew Jackson, the grandson of the imported barb, was the most famous trotting stallion of his day, and as a weight puller was unsurpassed in speed. While he was living his dam was said to be by Why Not, a son of imported Messenger; but it has been pretty thoroughly settled that she was a mare of unknown blood, taken to Philadelphia in a drove of horses from the west. Andrew Jackson was confessedly the greatest trotting stallion of his day, and from him have descended, not only the trotting horses

usually called Clays, but also the Patchens. He was foaled in 1828, and died in 1846. He also got Long Island Blackhawk, who was the first horse to trot a mile in 2:40 to a two-hundred-and-fifty-pound wagon, and from whom are descended Green's Bashaw, the Mohawks, and many other trotters of note.

Henry Clay, the origin of the Clay and Patchen branch, was a son of Andrew Jackson, and was foaled in 1837. The dam of Henry Clay was a trotting mare named Surrey. Nothing is known of her breeding, except that she came from Canada, and was famous, not only for speed, but also for endurance. Henry Clay was a fast trotter, and also possessed endurance. The son who has done most to perpetuate his fame, is Cassius M. Clay, the sire of George M. Patchen, Amos' Clay, Neave's Cassius M. Clay, Strader's Cassius M. Clay, all sires of note. At the close of the campaign of 1877, he had over forty descendants in the male line in the 2:30 class. This, for a horse that only lived to be eleven years old, is a remarkable instance of prepotency in the transmission of the trotting gait.

The Bashaws include the noted horses Black Bashaw, Green's Bashaw, Vernol's Blackhawk, Cozette, etc.; while the Clays include American Girl, Hopeful, Lucy, Lady Snell, Sam Purdy, etc.

ORIGIN OF THE BELLFOUNDERS.

Another horse which contributed a most valuable strain of blood to the trotters of this country, was Bellfounder, imported in 1822 from England. He was a remarkable horse in some respects. At three years old he trotted two miles in six minutes, and at four years made ten miles in thirty minutes. The Bellfounder cross is highly prized, and is found in some of the pedigrees of the Hambletonians, Clays, etc.

OTHER STRAINS OF BLOOD.

Another strain of blood is that of Duroc, son of the thoroughbred Diomed. He was sire of Messenger Duroc, out of a daughter of Messenger. This blood is found in pedigrees of the American Stars, where it is interwoven with that of the thoroughbred Henry. Seely's

SMUGGLER, 2:15¾.

American Star was by Stockholm's American Star, by Duroc. The dam of Seely's American Star was by Henry, by Sir Archy; second dam by Messenger. Crossing of Star mares with Hambletonian sires have produced great results.

The Royal Georges, a Canadian family who trace back to Tippoo, foaled in 1817, supposed to be by Ogden's Messenger. The "black whirlwind," Thomas Jefferson, is a representative of this blood, as well as Byron, Field's Royal George, Hershey's Royal George, Panic, etc. They are a promising family.

There are many minor strains of blood, but their reputation is generally founded on their inheritance of trotting qualities from the numerous families now extant.

Another important addition has been made within a few years, which consists of

THE PACING ELEMENT.

Columbus was a French pacer, brought from St. Johns, Canada East, to St. Albans, Vermont, in 1844 or 1845. His colts were almost uniformly trotters. Nothing is known of his breeding. The appearance of his stock would warrant the conclusion that he was one-fourth or one-half English blood. There were some distinguished trotters that once stood in the vicinity where he was raised, and his sire or dam might have had a sprinkling of the blood of the American trotter without leaving Canada to get it. Old Columbus was the sire of Young Columbus, out of Black Maria by Harris' Hambletonian. Young Columbus was the best son of Old Columbus. He was the sire of Phil. Sheridan. Had Young Columbus got nothing but Phil. Sheridan, it would have been enough to establish his fame as a sire; but in his grand colts Commonwealth, Adelaide, Flora Belle and Gen. Tweed, he shows the strong vitality that imparts his speed and endurance to the third generation of his descendants.

Old black pacing Pilot, was the founder of a trotting family that bears his name. He was a French pacing stallion from Canada. He stood in Kentucky from 1832 till he died—about 1855. He was a striking illustration of the French pacer converting the high-mettled

racer into a family of fast trotters. He was the sire of Alexander's Pilot, Jr., out of Nancy Pope by Havoc. This was probably the best son of Old Pilot. He improved the stock of Mambrino Chief in bone and muscle, and gave speed and bottom to other families of horses. Mambrino Pilot inherited his strong vitality and iron constitution from the Pilot cross. His two sons, Mambrino Gift and Hannis, bear strong testimony to the influence of the old pacer Pilot.

COPPERBOTTOM, HIATOGA, AND BLUE BULL PACERS.

Some of the Canadian pacers, and particularly the Pilots, have assumed the trotting gait with great readiness, much more readily, in fact, than the Copperbottoms and Red Bucks, the last-named family being the most persistent pacers known. Their tendency to that gait is shown even now in the numerous horses that trace back to them. The earliest of the pacers was Highland Maid, a mare that afterwards became a trotter, and was the first to trot in 2:27. She was by the pacer Saltram, by Kentucky Whip. Smuggler, Pocahontas, and all the Cadmus family, are descendants of Iron's Cadmus, a son of American Eclipse. The Illinois mare, Flora Belle, was originally a pacer, and came of the Uwharrie family, that is strongly in-bred in the Diomed blood. The Hiatogas, an Ohio family, that has produced Lew Scott and other noted trotters, is from Virginia stock, the dam being by Diomed. The first Tuckahoe found in the stud-book, is by Florizel, a son of Diomed, and this fact suggests the origin of another family of pacers that has produced many trotters. The Blue Bulls, descended from an Indiana pacing stallion of that name, are noted as early and remarkably speedy trotters, and have made rapid progress to the front during the last few years.

Other trotters in whose blood the pacing element is marked, are: Smuggler, Red Cloud, Mazomanie, Kansas Chief, Flora Belle, Ethel, Richard, Elsie Good, Russell, Milo C.. Bertie, Kate Bennett, Purity, Ed. Wilder, and Ella Wilson — the last ten being the get of Blue Bull.

STALLION HAROLD.

HISTORY OF TROTTING PERFORMANCES.

THE FIRST RACES OF RECORD.

The first trotting race we have any authentic account of, occured at Boston, in 1818. Boston Blue trotted against time, and made a mile inside of three minutes, the exact time of which is not known. It was then considered a great performance. Previous to this there had been a growing taste for trotters as roadsters, gradually encroaching on saddle horses, but no public trials had been made. Running horses, however, had always been popular, more especially in the south. Virginia and Kentucky were the nurseries of these noted thoroughbreds. General Jackson done much to aid in improving the stock in Kentucky.

Six years later, 1824, Albany Pony trotted, to saddle, one mile on Jamaica turnpike, in 2:40. The next horse we have any account of is Top Gallant, by Hambletonian. We have a more complete record of his performances, than any other trotter of that period. He was foaled in 1808, and trotted his principal races after he was twenty years old. In 1828, in a match against Whalebone, over the Hunting Park course, Philadelphia, he trotted four, four-mile heats in 11:16, 11:06, 11:17 and 12:15, or the whole sixteen miles in 45:54. In 1830, when twenty-two years of age, he trotted twelve miles over the same course in 38 minutes; and in 1831 made two miles in 5:19. Betsy Baker, by Mambrino, beat Top Gallant three miles under saddle, carrying fifty pounds, in 8:16. It was said that she could, when sound, trot twenty miles in an hour. Trouble, by Hambletonian, trotted two miles in 5:15; and Sir Peter, by same sire, trotted three miles, in harness, in 8:16. Whalebone, another of Hambletonian's colts, trotted three miles in 8:18. Screw Driver, by Mt. Holly, in a race with Betsy Baker, trotted two three-mile heats in 8:02, and 8:10.

About this period the length of the heats began to be reduced to one mile, instead of the longer performances, until at the present time it is rare to hear of anything else. In 1834, Edwin Forrest trotted, under saddle, one mile in 2:36, at Trenton, New Jersey; and

on Long Island, during the same year, trotted a mile in 2:31½, which was the best time ever made up to that date. Dutchman, in 1839, made his great record of three miles, under saddle, in 7:32½; one mile of which was made in 2:28—the best time made to that date. In 1847, Highland Maid trotted a mile, in harness, on Long Island, in 2:27. She was originally a pacer.

In 1838, Lady Suffolk, as game a mare as ever stood on iron, made her first appearance; and in 1848 made a record of 2:26, which was considered a little less than miraculous. In 1859, Flora Temple, then fourteen years old, trotted a mile in harness, at Kalamazoo, Michigan, in 2:19¾. This was without parallel for eight years. In 1867, Dexter trotted a mile, in harness, at Buffalo, in 2:17¾. This was thought to be the lowest possible notch to be attained by any horse. But in 1874 came a flyer, the "Queen of the Turf," Goldsmith Maid, who eclipsed all former performances by trotting a mile in harness, at Mystic Park, Boston, in 2:14. This stood unrivaled for four years.

In 1878, however, that game horse, Rarus, trotted a mile, in harness, at Buffalo, in 2:13¼. This horse made a brilliant career during the year 1878, and was credited as follows: Fastest mile in harness, 2:13¼; fastest first heat, 2:14; fastest second heat, 2:13¼; fastest third heat, 2:13¾; fastest fourth heat, 2:13¼; fastest three consecutive heats, 2:15, 2:13½, 2:13¾. He may fairly be said to have won the sceptre from the old mare who held it for so many years. All this has been accomplished in one season, and in addition to this he has trotted three heats below 2:14.

In addition to the above, in a handicap race at the opening of the Chicago Driving Park, October, 1878, when he went to wagon, Hopeful to harness, and Great Eastern to saddle, which race was won by Hopeful in 2:17¼, 2:17, and 2:17; he was privately timed and made his three heats to wagon in 2:18½, 2:18, and 2:18, it being no record, however. During the same races the trotter Hopeful, made three mile heats, to wagon, in 2:16½, 2:17, and 2:17—the fastest time to wagon on record. During the first heat he had a running horse accompanying him part way.

BELMONT.

It is interesting to note the growth of the trotting element during the past few years, as well as to observe the lowering of the average time of mile heats. In 1872 there were ninety-six horses who had made a record of 2:30 and better; in 1873 there were one hundred and six; while 1874 had one hundred and fifty-three; in 1875 the number was one hundred and eighty-four; in 1876 it was two hundred and twenty-five; in 1877, two hundred and eighty-four horses made records of 2:30 and under. Of the latter number, two hundred and sixteen were in 2:25 class, one hundred and six in 2:23 class, thirty-three in 2:20 class, and nineteen in 2:19. The average time made in 1866 was 2:38½, while in 1876 it was 2:23. This is in a great measure due to improved tracks and appliances, as well as skill of trainer.

In 1877 there were two hundred and eighty-two horses who trotted in 2:30 or under; in 1878, the number was two hundred and seventy-two; in 1879, two hundred and eighty-eight; and in 1880, two hundred and sixty-seven horses trotted in 2:30 or under. In 1880, forty-six horses won ten or more heats each. Of these, twelve belonged to the Hambletonians, seven to the Vermont Blackhaws, four to Mambrino Chief family, four to Pilot family, two to the Clays, with thirteen credited miscellaneously. During this same year twenty-three horses made records under 2:20. The different heats trotted, and the different families represented were described as follows: Daniel Lambert and Ethan Allen had twelve representatives who trotted seventy-three heats; Gen. Knox and other Blackhawks numbered twenty-nine, and trotted one hundred and ninety heats; while the other Morgans numbered seven, and trotted nineteen heats in 2:30 or under. The Bashaw family, in connection with the Clays, numbered twenty-five performers, and one hundred and twenty-three heats. The Messenger families together gave one hundred and eleven performers, and seven hundred and thirty-five heats; and those of pacing parentage numbered 22 performers, and trotted one hundred and thirty-eight heats in 2:30 or under. The families of lesser note contributed sixteen horses and eighty-two heats, while the unknown and irregular sires gave performers to the number of fifty-seven horses, and two hundred

and fifteen heats. But the great events of the year were the performances of St. Julian, who trotted a mile in 2:11¼, at Hartford, Conn., Aug. 28, 1880, and Maud S., who trotted a mile 2:10¾, Sept. 18, 1880, over the Chicago Driving Park track.

The season of 1881 demonstrated that the speed of both trotters and pacers had not reached its limit. The three most notable events of the year were: The magnificent stallion contests at Rochester and Chicago; the two great efforts of Maud S. in her assaults against Old Father Time, in which on each occasion she knocked off a quarter of a second from her previous record and demonstrated her marvelous superiority. Little Brown Jug appeared upon the track as a star of the first magnitude, and at the pacing gait achieved a series of brilliant victories which will ever remain as one of the most memorable and exciting chapters of modern sport. In the remarkable race at Rochester the contestants were Alexander by Ben Patchen, dam by Canada Jack; Robert McGregor by Major Edsall, dam by Seely's American Star; Santa Claus by Strathmore, dam Lady Thorne, Jr., by Williams' Mambrino; Hannis by Mambrino Pilot; Wedgewood by Belmont, dam Woodbine by Woodford; Bonesetter by the Brooks Horse, and Monroe Chief by Jim Monroe. This splendid field included the fastest and best bred stallions of the trotting track, the purse was a regal one ($10,000), and the audience that gathered to see the race consisted of all the leading horsemen of the Union. The first heat was won by Alexander in 2:19, after a fierce struggle with Robert McGregor, who was beaten by a length. In the second and third heats, the final battle in the home stretch was fought between the same horses, Robert McGregor in both instances winning by a head in 2:19 and 2:18¾. In the fourth heat the great Californian Santa Claus appeared as a formidable factor, and the finish was between him, McGregor, and Alexander, but the latter trotting even and strong, again caught the judges' eye in 2:19¼. The fifth and sixth heats were won in grand style by Santa Claus, but the desperate character of the struggle told upon the time, which was 2:21 and 2:23. The final heat was between this illustrious trio, and resulted in the victory of Alexander, Robert McGregor second, and Santa Claus third. Time 2:25½. So ended the greatest and most obstinate stallion race ever trotted in the world. In

the same month this battle was fought over again with but slight alteration in the *personnel*. On July 19 at Chicago in the $5,000 purse for all stallions, Robert McGregor, Santa Claus, Hannis, Wedgewood, and Monroe Chief again joined issue, and Piedmont by Almont also hurled his gauge into the arena. This great speed contest, while not so great a test of endurance, showed a far higher speed rate, and stamped the victor Piedmont, who achieved a record of 2:17¼, as the greatest stallion of his year. Robert McGregor won the first and third heats in 2:18 and 2:18½; Santa Claus won the second heat very cleverly in the fast time of 2:17½; the hero of the day then came to the front and won in three heats in 2:17¼, 2:19½, and 2:21. Piedmont had now the next record to the mighty Smuggler, and hope beat high that his unapproached record would soon be equaled or passed.

The eyes of the trotting world were fixed upon Maud S., who had reduced the record below the anticipations of the most sanguine, and had done it with such ease that still greater achievements were expected. On July 13, 1881, she defeated her own record by a quarter of a second, and at Rochester, N. Y., she again reduced the record, making the mile in 2:10¼, at which point it stood until the season of 1884, when it was passed by herself and the wonderful son of Dictator, Jay-Eye-See. The history of Little Brown Jug is one of the romances of the turf. Born and bred in Tennessee, he was originally sold for $25; after passing through several parties' hands he was eventually put in training, and soon developed great speed. During the season of 1881 he defeated all the leading horses at his gait, and wound up the season at Hartford, by pacing the three fastest heats at any gait, in 2:11¾, 2:11¾, and 2:12½. The year was a great one, the 2:30 list recorded a large accession, but the events we have here recorded are the great historical incidents of the track for 1881.

The season of 1882, while an exceptionally active one, and distinguished by great meetings, and large fields, was not prominent for record breaking, the pacing and trotting records were undisturbed, and the most memorable incident of the year was Jerome Eddy, by Louis Napoleon, making a record of 2:16¼. The season of 1883 had for its most prominent landmarks the unprecedented performances of the

illustrious trio Jay-Eye-See, Phallas, and Director, all by Dictator. The little black gelding owned by Hon. J. I. Case of Racine, Wis., although almost a pony, trotted in 2:10¾. Phallas, owned by the same gentleman, trotted in 2:15½, thus, within a quarter of a second tying the stallion record of Smuggler, 2:15¼, and Director attached 2:17 to his name. A new pacing king appeared in the person of Johnston, who opened the season unknown to fame, and before the first frosts of early fall, passed all previous records pacing and trotting, making his mile in 2:10.

The season of 1884 was the most conspicuously brilliant in the annals of the track. At all ways of going, all previous records were passed, and the marvel of to-day was exceeded by some new wonder to-morrow. Jay-Eye-See, at Providence, R. I., trotted against his own record, and reduced it to 2:10, and for one brief day was the king of the trotting track. On the following day at Cleveland, Ohio, Maud S. trotted in 2:09¾, and regained her lost throne. In the fall at Lexington, she made assurance doubly sure by trotting in 2:09¼. Johnston astonished the world by pacing the Chicago track in 2:06¼. The great Phallas in the fourth heat of a race trotted in 2:13¾, defeating all previous stallion records, and also making the fastest fourth heat ever made in a trotting race. Maxy Cobb, by Happy Medium, trotting against time again, reduced the stallion record by trotting a mile against time in 2:13¼. H. B. Winship, trotting with running mate, compassed a mile in 2:06, and Westmont, pacing with running mate, approached close to the dazzling ideal of the turfman's dream, 2:00, by pacing the Chicago track in 2:01¾.

The American trotter has become a distinct breed, and is the most perfect road horse in the world. The Union is studded with stock farms devoted to his breeding and development. Europe, Australia, and the East have become our customers, and every intelligent farmer can materially increase his income by breeding every year a few colts from a genuine standard sire.

CHAPTER II.

BREEDING, TRAINING, AND TROTTING APPLIANCES.

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BREEDING OF DRAFT AND TROTTING HORSES.—How far disease is hereditary — To select a suitable dam and sire — To produce trotting or running horses — How to avoid disappointment — The traits inherited from dam and sire — Desirable crosses for trotting horses — To tell when a mare is with foal — Care of a mare with foal — Treatment after foaling — To make a mare own her colt — Care of the colt —Weaning, feeding, etc.

TRAINING THE TROTTER.— Slow horses made fast, fast horses made faster — Breaking the colt — Learning to walk and trot — Use of wagon or sulky — Feeding, jogging, and spurts of speed — Cautions to be observed — To keep up the ambition — TRAINING THE MATURE TROTTER — The early spring treatment — First preparatory work, and gradual hardening — Feeding, sweating, and scraping out — Its object — Spurts of speed — Fitting for the race — To get into condition and to keep there.

USE OF TOE AND SIDE WEIGHTS.— What their uses are to correct mixed gaits, and to alter action — Weights or heavy shoes; which?—Horses which carry weights, and how much — Directions for their application and use — How heavy to apply to convert a pacer into a trotter — To correct single-footing, hitching, paddling, thumping, scalping, brushing, and other bad habits.

BEST BITS FOR TROTTERS — Importance of proper bits — Patented devices needless — Kind of bit to use, and when to change it — Bit to correct a puller — Use of the overdraw check — Material for bits — Evil habits are contracted — Proper bits for colts.

PROFITABLE BREEDING.

DARWIN ON HEREDITARY DISEASE.

Darwin sums up the results of his researches as follows: "I have consulted many works, and the unanimity of belief by veterinarians, of all nations, in the transmission of various morbid tendencies towards disease, is surprising. Authors of wide experience give in detail many singular cases, and assert that contracted feet, ringbones, curbs, splints, spavins, etc., as well as jibbing and ill-temper, are very plainly hereditary. The French practitioner, Hugard, going so far as to say that a blind race could soon be formed. It is not the actual ailments, such as spavins, etc., but the predisposing tendencies toward the development of these diseases, which is inherited. The narrow loins and flat sides, which give a proneness to attacks of diarrhœa and colic, are of certain lineage." This constant tendency of morbid conditions of defective organs to reappear in succeeding generations, shows how important it is that both dam and sire should be sound in wind and limb, and not belong to families which have taints of blood.

SPECIAL DIRECTIONS FOR SUCCESSFUL BREEDING.

Put yourself in the way of learning the practical part of the business by observation, the experience of others grown grey in the enterprise, and books treating on this subject. Above all, become a student of the horse, of the history, breeding, faults as well as good qualities, of all the noted families as well as individual horses. Study pedigrees that you may understand the results of certain crosses. Practically study and examine the horse, not only with the eye, but with the hand and finger. Make yourself familiar with every joint, bone and tendon. Study the skeleton until you know the place of every bone and sinew, and be able to look *through* as well as at him. Learn to distinguish the weak, as well as the good points, at sight.

BREEDING OF TROTTERS AND RACE HORSES.

There is not a more fatal delusion in breeding than that of expecting a winner from a dam or sire who was not a winner, and

whose families were not. The fact that now and then worthless horses spring from noble parentage, does not affect the principle, for all will agree that it is wisdom to breed to form for proportion, power for strength, speed for speed. If the particular quality desired is especially marked in any family, it is good policy to cross with it, unless there be an antagonism of blood or hereditary taints which would intensify an already existing evil. To go outside and breed to a horse who might possess valuable traits, even in a high degree, but whose ancestors lacked them, is but to incur disappointment. To be sure, chance horses do now and then appear, but it is the experience of breeders as well as trainers, that they are unreliable, both in the stud and on the course. Experience has shown that the colt more especially inherits the gait and form from his sire, but the spirit, disposition and constitution from the dam. No satisfactory results will be obtained if these facts are not borne in mind and followed. The blood of Messenger seems to "nick" happily with nearly all the trotting families, most notably with American Star mares; also, the crossing of Hambletonian and his sons on mares by the son of Neave's Clay, known as Sayer's Harry Clay.

HOW TO TELL WHEN A MARE IS WITH FOAL.

Take a rope, strap, or string, and measure around the girth where the harness goes on the back and the belly-band buckles on; then measure again just forward of the hind legs, around the body; if larger around in the latter place than in the former, you may safely conclude she is with foal.

CARE OF MARES WITH FOAL.

A mare not intended to be kept at work, should not be turned into a pasture so rich and succulent as to disagree with her stomach, or make her unwieldy from fat. Inattention to this point may result in miscarriage, whilst, on the other hand, if the pasture be too poor, the mare will become thin, and will starve her foal in its growth. If the animal has been highly fed, she should have a feed or two of oats daily after she is six months gone. Hay and oats, with a few carrots sliced in a bran mash, given every night, will be found good, the

animal being thus kept free from inflammation, and the foal well nourished. Excitement of every kind should be avoided, as it is a common source of "slipping" the foal, and it is well to remember that one mare miscarrying will probably affect others in proximity to her. Only when absolutely necessary, should purging physic be given, and after bran mashes and other changes of food have failed to produce any effect, the very mildest aperient likely to answer the purpose being used.

TREATMENT AFTER FOALING.

If there is not plenty of grass the mare should have carrots, bran mashes, and a feed or two of oats, which for a time may be given in the form of gruel. At weaning time she may require a dose or two of cooling medicine if she is not as dry as a mare usually is by this time; generally, however, no interference is required.

EARLY TREATMENT OF THE FOAL.

As soon as the foal comes it should be examined, in order to ascertain whether the limbs and other organs are perfect. See especially to the state and length of the umbilical cord, as, if this is broken or torn off too short, or so near the abdomen that the urine flows through it, and inflammation is caused thereby, we have a very serious disease to treat, and, if it is not attended to immediately, our colt will die. About the time of the mare being "in season," the foal is generally purged a good deal, and an occasional warm drench may be necessary. At the end of a month, or sometimes earlier, the foal will eat bruised oats, and highly-bred young stock are generally given a small quantity. Colts of all classes should have shelter in bad weather, otherwise they grow out of form and lose flesh. If neglected the first winter, they never attain the size they otherwise would.

TO MAKE A MARE OWN HER COLT.

Take some milk from the mare and rub it on the colt's nose; then let the mare smell it, when she will own her colt at once. This is a simple remedy, but we have known it to work like a charm.

WEANING THE COLT.

This may be done at about the end of the sixth month, the milk not being of much benefit after this, especially if the mare is again with foal. The young foal's teeth and stomach are now competent to eat and digest the succulent grasses that are to be found. Carrots or turnips which have been steamed, may be mixed with bran and given night and morning. Three or four colts running together will be better, as they miss their dams less.

TRAINING THE TROTTER.

BREAKING THE COLT.

Understanding the principles which underlie producing a trotter, the next step is to educate the colt and develop all there is in him. He should be made docile and fearless by handling and petting, yet from the attitude of a master. Colts should not be teased and played with by children, who are half afraid of them. He should be accustomed to the halter early, care being taken not to allow him to learn to pull. Undoubtedly the walk is the pace in which many things are best taught, as, for instance, turning to the right and left, or from one hand to another. It is also very important, at this stage of his instruction, that the greatest care and patience be exercised in impressing on his memory, by thorough practice and oft-repeated trials, the only proper method of training. When a year old his daily allowance should be from four to five quarts of oats per day, being cautious about overfeeding, which may lead to digestive troubles in after years.

DIRECTIONS FOR BITTING AND DRIVING.

From the age of one year he should be accustomed to the application of the bit, which should be substituted for the halter. Avoid using those severe rigs so common among farmers. At this age he should be taught how to hold his head, and to obey promptly every

touch of the bit. An easy, governable mouth is greatly to be desired, and can easily be attained at this period. If properly done, he will never prove a puller or bolt the track, but remain steady, and to be depended on for all there is in him. Patented bits for correcting bad habits, will be entirely unnecessary if this is properly done.

TO BREAK TO WAGON, SULKY, AND SADDLE.

At two and one-half years he may be broken to saddle, first accustoming him to have it strapped on his back, then following with a small boy. The hitching to the sulky should then follow, until he is accustomed to be hitched up, and then should come his introduction to the light trotting wagon, which is far preferable for training the colt than the sulky, whose weight of driver borne on the colt's back may alter its symmetry.

CARE IN EXERCISING, JOGGING, AND SPURTS OF SPEED.

As soon as the colt becomes familiar with the trotting wagon, he should be accustomed to the roadways, the meeting of teams, and the passing of vehicles. It is familiarity with objects which produces indifference. It is highly essential that the colt should be free from restiveness, nervousness and unsteadiness. This greatly depends on the education, and the greater the obstacles the more patience must be observed. The high-strung, nervous horse is often worried out of all chances in a race by the tedious scoring of designing drivers. This can be fortified against by proper education during the training period. From the period of driving to wagon commences the danger of overdriving. Every time he shows a burst of speed, the driver is anxious to see him do it again. From over-work he loses spirit, lugs on the bit, gets to mixing his gait, hitches, etc., habits which ruin the prospects of the colt. All evidences of speed should make the driver doubly cautious. The spurts should be short, and but few at each drive. Remember that the object of training is to develop a gait which shall be a fixed habit, as well as to gradually harden and toughen his constitution, and make him a trotter of stamina and endurance. As such he will prove a winner, while the reverse will be

productive of losses and vexation of spirit. We must caution against severe training of the young colt and unformed horse. It not only retards his proper development, but is productive of spavins, ring-bones, curbs, etc. A child cannot do a man's work, neither can a colt stand severe training or the intense competition of colt races. With runners it is different. They get their speed by the time they are in their three-year-old form, and do not remain on the turf but a few years. Trotters hardly ever make much of a mark before five year's old, and gather their laurels from that age up to twenty years. Very fast trotting is the result of years of development and training. We warn breeders against too early forcing their trotters. They may be brilliant, but their time will be brief.

Professional trainers and drivers of trotting horses are making a very great mistake by continually jogging their horses over the same old track, day after day, until they become tired out, disgusted, and track-sick of making these continued circuits. The same routine of business every day will, perhaps, harden the muscles and improve their quality, but it cannot improve the horse in pluck and good feeling unless it influences and interests the mind. It will have a tendency, on the contrary, to shorten his stride, make him dull, show a disposition to let up, and finally make a confirmed loafer of him, the disadvantage of which no horseman need be reminded, if he has had the benefit of experience, or the facilities for observation.

If a young horse possesses undeveloped speed, he will generally learn to extend himself, and trot fast much sooner, if circumstances are such that he can take his work in company with one possessing equal capacity; the emulation of an occasional spurt brightens him up, convinces him that there is an object in view, and causes him to forget his fatigue.

A very good plan is to hook him double to a light skeleton occasionally, driving sometimes on the track and sometimes on the road, so that the monotony of the work will be varied. He will then have different scenes to attract his attention, which will induce him to take his exercise in better heart, and under these circumstances, will bear more of it. When a horse continually drops back into his

breeching at each opportunity, and does not try to trot, it is an impossibility for him to improve, no matter what may be his breeding, or what artist may have him in charge.

Colts should never become habituated to trotting certain distances. His idea of distance should depend on the will of the driver, that is, he should be willing to trot his full power, any distance his owner wishes. If a colt becomes habituated to trotting quarters and half-miles, he will let up after reaching either of these distances during mile heats.

TRAINING THE MATURE TROTTER.

After the season of campaigning has closed, then comes the question what shall be done with the trotter during the fall and winter. It is not a good plan to entirely close all work, or too suddenly change the habits of the summer, by confining in the stable day after day, standing idle. If the weather will permit, a short run at grass, where he will get plenty of exercise, yet enjoy a respite from work, is good preparation for getting his system in condition to pass through the following winter. After this he should have exercise enough to make him relish his food, either by gentle driving on the road, or so arranged as to allow out-door freedom on bright days. He should invariably be stabled at night, or on stormy days, and if drove, no ambitious rivalry should tempt to spurts of speed with other roadsters, whose fate is not to campaign next year. The whole object should be to exercise enough to properly digest and assimilate his food, which should be so regulated as to increase his flesh, to a well-to-do condition which will enable him to withstand the rigors of winter better than if he was thin. It requires a supply of fat to keep up animal heat and endure the cold, which will better enable him to resist attacks of colds, influenza, etc. Again it is much easier to condition a horse in the spring who is in a thriving condition, even if he carries much flesh, than one which is low in form and flesh, because the superfluous flesh can easily be reduced to muscle without unduly increasing the feed, while the thin horse is called upon to digest more food than is prudent to enable him to stand the work and lay

on muscle for future use. Many horses of this latter class come to grief through failure of their digestive apparatus to keep up the supply of nutrition through the season, owing to being taxed too greatly during the early training. Horses trained in this way are more apt to get out of condition and become subject to derangements of the bowels and attacks of colic, with staring coats, etc. It is easier and safer to train down than to train up. The "freezing out" process is not a sensible nor a humane one. The horse should be made comfortable and kept thriving, yet not fatted up like a hog. Grain should be given if he seems to need it, but in less quantity than when at work.

FIRST SPRING'S WORK.

At the near approach of spring, the horse should be exercised to wagon a short time each day, not in the character of jogging, but driven on the road on the walk, to gradually get his muscular system in condition to take more work in future. If this is properly done less of real jogging need be done. The dull routine of pounding around a track day after day is not encouraging to the horse. As little of it should be done as possible, provided there are good drives outside to wagon. The diversity of objects along the roadway will divert his attention, be attractive to him, and make his morning drives a recreation. If this preparatory driving on the walk is properly and carefully done, he will need much less of that soul-wearying track work, before he will be ready for merry rallies of speed, which will wake him up and bring back remembrances of former races won, and ambition for more probably to follow.

BEGINNING EARNEST WORK.

When the season has advanced enough for earnest work, it is hoped the horse is now hardened enough to take short spurts of speed at half-mark. It is good policy to mix the work now, by giving a preliminary drive on the road to wagon, and then to hitch to sulky and after a mile on track to give him a short spurt to learn him what a track is for. It is better on this account to never bring him on the track without spurts of speed to let him associate these with the

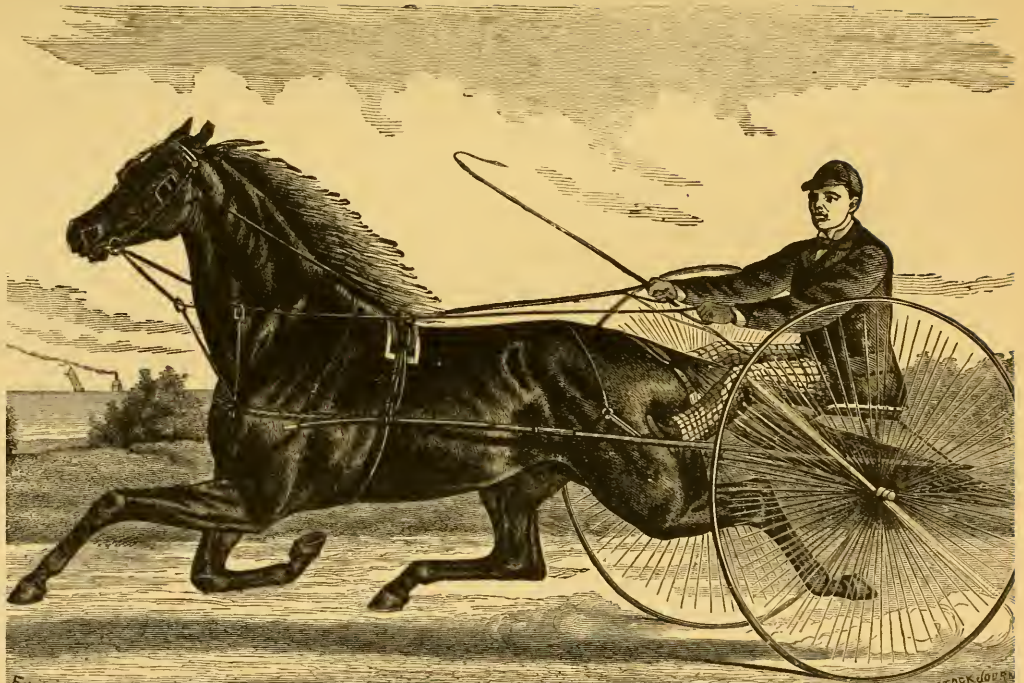
track, but these spurts must not be over-done, nor carried to that extent as to leave the horse sore from their effects. If this course can be followed you will never have a "track sick" horse, or one who will always be ready to settle back into the breeching at every chance. When he comes on the track to sulky he will soon know it is business, and enjoy it as much as the driver, provided he has the proper spirit, without which he is worthless as a trotter. It takes ambition, courage, gameness, and a well-fitted muscular system to win. Without all of these it will end in disappointment.

FEEDING DURING JOGGING.

During the early work to wagon no particular change of food is necessary, except an increase of allowance, generally in proportion to his increased work. During the preparatory period of driving, bran mashes may be given, together with an occasional feed of boiled roots, which will get the bowels into active condition and avoid the resort to physic. On no account should the horse be given physic unless it is an imperative case of illness. If the bowels need relaxing, the use of bran mashes will do this effectually. We are now speaking of a horse which is well. Some still cling to the idea that an effective physic is the proper commencement for preparatory work; this is a mistake. It reduces the strength, and may leave evils in its train not easily combatted. "Throw physic to the dogs" is a safe rule when the horse is all right. The driver who begins with dosing in the early part of the season, will end behind the flag before the season is out. Flaxseed meal may be used and given with good effect after the warm weather has settled, if bowels are costive. If used too early it is apt to have a tendency to cause the horse to shed his coat early, and render him more sensitive to changes of temperature.

AMOUNT OF JOGGING AND FOOD.

No rule can be laid down as to the amount of jogging to be given a horse, nor the proper amount of food. This varies with each individual horse, and is within the judgment of the trainer. No fast work should be given for at least ten days or two weeks, by which time the muscular system will be in condition to take slight spurts at half-



GOV. SPRAGUE, 2:20¼.

speed, which should never be long enough or so lively as to tax his strength. He is now in a situation where he can endure very little work compared with what he will accomplish later on with ease. As the work is increased, and trials of speed increased in distance and in fastness, the food must keep pace with this extra call upon his powers; the grain should be increased and the hay diminished. Unless he be a glutton, he should have all the hay he will eat up clean, but the ultimate object is to finally work the horse on to more concentrated food to lessen the bulk of his abdomen, and get his body into a close, well-knit condition. A little corn may be added to his oats occasionally, but the latter grain should be depended on. The bran mash may be given once a week, unless the horse is of loose, washy condition, when it may be omitted.

INCREASE OF WORK.

After there has been a week or ten days work with slight spurts of speed, he may be given a half mile at three-quarter speed, to "open him up," and to get his system well in action. This should always succeed a preliminary amount of work to get the heart beating in unison with the muscular action. If a high-lifed animal, who goes energetically and feels so fine that he can hardly contain himself, care must be taken not to give him too much speed, nor cut him loose. Such a horse will be very apt to overdo matters and go to extremes. On the other hand, some sluggard horses will need a little urging to come up to the mark desired. The ambitious horse must be restrained, the sluggish be encouraged. The distance driven, and the pace, must be gradually increased as the horse will bear, which requires good judgment in the handler, but it is well not to go beyond a half-mile trial, at three-quarter speed, for some days. When the time comes for a full mile, it should be given after some preliminary work; care should be taken that he is not pushed too sharply the first half, but rather restrain him if ambitious, and encourage after the three-quarter-mile pole is passed; learn him to finish well and strongly. This is one of the most valuable qualities in a race horse. It is also a good quality to be able to score rapidly and get away quickly, so as to be able to

seize the pole at the first turn, if possible, but if he is ever so fast the first quarter, he is a failure if not able to finish well up on the home stretch. If he can be so trained, and at the same time possess gameness and staying power to do both, he will prove valuable, and at the same time reliable. When he is able to put in a mile with good effect, and comes out all right, without fatigue or depression, he may be given a mile and repeat with from twenty minutes to three-quarters of an hour between; a trial of this kind may be given every few days to accustom him to long-continued exertion, but they should not be carried to the extreme in pace or frequency to endanger working the fine edge off, or running the risk of having a stale horse from over-work. The pace should never be at top speed; this should be reserved for the actual race when a large purse is at stake. He must be kept just within his powers, and carefully watched, as some days he may not be in condition to take as much work as ordinarily. It is a science to properly fit a horse for a race or campaign, and no positive rules can be laid down. The utmost watchfulness and discretion are needed to know just how much work he will stand and gain on it.

GOING IN COMPANY.

It is a good plan to accustom the horse to go in company. One of the mistakes which drivers make, is the private jogging and speeding of horses alone. Their private trials are a snare and a delusion, giving false encouragement to owners who often place their money on the horse to lose it by his bad actions when brought out in a numerous field to face the starter. If possible, he should be given matinee races in company with others, should be scored up and down the track with them as he will be called on to do in an actual race. These trial races need never be up to the top of his speed, as they are more to get him steady for the regular work of the campaign; they should always be a full mile, and if possible, should be with at least two or three other horses. If he has trials with only one horse, the addition of others in a regular race will make him nervous. He should be accustomed to take any position, and to have them all around him. Many a 2:25 horse has been distanced in a '30 race because of unsteadiness,

because he was green to the work of actual racing. He may have the "foot" of the whole party, but his nervousness defeats his speed.

SWEATING AND SCRAPING.

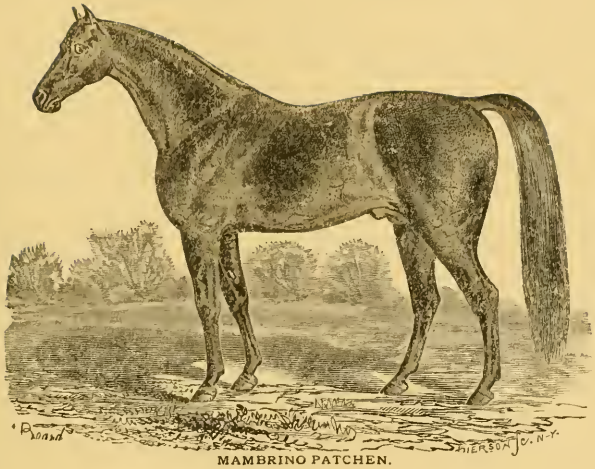
The object of sweating and scraping out is to reduce the amount of internal fat, and thereby give more room for the unencumbered working of the vital parts, at the same time it works on the principle of a Turkish bath on human beings, opening the pores and exciting the bodily functions to increased and healthy action. A horse gross in flesh, is thereby easier fitted and reduced to proper amount of flesh without so much hard work. It must be borne in mind that sweating and scraping does not build up, but reduce, consequently when a favorable day occurs, the work must be modified for this purpose. It is better to obtain the sweat by use of a light blanket and hood than by heavy clothing, provided it can be produced by a fair amount of work. Great care must be taken that the horse does not take cold afterwards, as he will be in a most sensitive condition regarding cold drafts, etc. More judgment is necessary in properly cooling off than in getting the scrape. After the scrape, he should be walked in open air, in blankets, until properly cooled off. Sometimes a second scrape can be got. It won't do to hurry the cooling off; after he is sufficiently cool, he should be brought in and thoroughly rubbed down, and again blanketed and walked. The limbs should be bandaged closely, but not tightly during the walking exercises, and when finally returned to the stable, the feet and limbs should be cleansed with warm water and castile soap, thoroughly rubbed dry, and again bandaged. If the bandages are drawn too tight, they will interfere with the circulation of blood to the parts. No work beyond the sweat should be given that day, but the next day he will, if properly done, be in the finest of spirits, and supple and sprightly as a colt. The regular work should be now taken up, and a half-mile can be given him. This sweating should not be carried too far; some horses of a washy, flabby nature, cannot stand such a reducing process in connection with hard preparatory training. Knowing what it is used for, the intelligent trainer will understand how to use this auxiliary to his training. It is

often an assistant in reducing a gross horse with weak legs, who otherwise would have to indulge too hard work to get down to proper weight.

It must always be kept in mind that the sweating is a reducing process, and does not add to the strength, and calculations must be made looking forward to the fact that in his engagements during the season he will get a good deal of this, as well as hard work, consequently must not be fitted too fine early in the season. The horse should be very critically watched during this period so as not to reduce too rapidly, yet fast enough to get him in proper form for his first engagements, yet he must not be expected to come up to the fullest extent of his powers, even during his first races. In fact, his work should be so arranged that the racing campaign should be but a continuance of his preparatory training, going better every week, and able to do a little better in each contest, with reserve powers for another link, if emergency, or a great purse is at stake, to excel all his previous efforts, and astonish even his friends. Such a horse, with such a preparation, can find plenty of backers always, while a horse who gets out of condition after an early race or two, either through lack of judgment of his trainer, or by inherent weakness of constitution, will be called a "duffer," and despised by all. Some horses can go out and show a sharp spurt, but are good for only two races or so each season; others can stand a hard campaign, and keep coming even until fall. The first kind of horses are not worth training, and even if capable of trotting fast heats, cannot accomplish enough during the season to pay expenses; but the horse who can endure one race a week, and be railroaded over the country, even if not able to trot very fast, is a surer horse than his brilliant but short-lived rival.

Until the horse has been trained, it is impossible to say how much work he will need to bring him into condition, or how rapidly it can be pushed.

The trainer must be vigilant as the work goes on from day to day, and if the slightest symptoms appear to indicate that the limit has been reached, the horse must be eased. Experience, judgment, and



MAMBRINO PATCHEN.

skill are imperatively demanded at this juncture, and when they do not exist in fair degree, it will be the best course to keep on the safe side and be sure that the horse is well within himself. It is true that he may not be up to the keen edge of which he is susceptible; but there is no remedy for this, except at the great risk of overdoing him altogether, which risk is great in such circumstances in any hands but those of a skillful and watchful trainer. It will not do to carry on until the horse is off his feed, dull in the eye, and his coat begins to stare, because the game is up when this is the case. The point at which his work ought to have been eased is passed, and it will take some time of nice handling and gentle work to get behind it once more. In five or six days, or a week after the first trial, the horse will be fit to be tried a mile, if he has been doing well. It being found that he is "all there," this will commonly be sufficient for a mile race.

SPEED AND BOTTOM ARE BOTH NECESSARY.

The horse that is fit to trot mile heats, three in five, in which the heats are broken, is able to trot a two-mile race, so far as condition is concerned. Natural stoutness and game are demanded for long races. Now, without condition, the horse cannot have "bottom," which is simply capacity to endure. Without game, which is pluck to try till the last chance is out, the bottom may exist to very little purpose. It follows that the saying often heard: "condition makes bottom," is only true in a limited extent. It enables the game and naturally stout horse to make avail of all his bottom, and put forth his powers to the uttermost degree. Again, it is said speed makes bottom, but this is next kin to nonsense. As long as there is nothing like equal speed against it, it enables the fast horse's driver to keep him well within himself, and thus to dispense with the bottom, which, against another of nearly equal speed, would be necessary to save the heat. And speed is of very great importance in another point of view: it enables its possessor to go ahead, take which part of the course he pleases, and fret and worry the other horse. Very few horses have courage and temper to go on behind at their best pace and persevere

to the end without breaking. Therefore, the horse of known bottom may act bad when he finds himself out-trotted from the score, in a long race, and is urged all the way; and if the driver pulls him together, the other may steal away, and open such a gap, that the closing of it at the end of the heat will be impossible. Speed may be an available substitute for bottom, but it cannot be bottom itself in any sense. The slow horse, in condition, can hold his best speed easier and longer, than the speedy horse his, out of condition.

TO KEEP A HORSE IN CONDITION FOR CAMPAIGNING.

When a horse has appeared in his first race, showed the speed you might reasonably look for, and evinced a satisfactory condition, he is not to be treated exactly as before in preparing for the next. It is proper to reduce his work, for if he is kept up to the same pitch of preparation, he is sure to lose speed. The work is to be less in quantity, but with numerous short brushes and merry rallies, leaving the horse in excellent heart and free spirit, thinking well of himself.

ERRORS OFTEN MADE IN TRAINING.

Many a race is won by a sharp spurt on the home-stretch, which would have been lost if the speed had been worried out with a great deal of walking and slow track-work. Let there be rattling spurts to keep up his ambition, but not too many at a time. To produce a horse full of staying condition, and with all his speed, is the proper aim of the training art; to have him capable of long endurance, yet deficient of his known rate of speed, is an error; to have him speedy for a short distance, but unable to stay in a race, is another error, and marks the trainer as deficient in his preparation.

In order to be successful, the trainer must intimately know the constitution, temperament, strength and infimities of his horse; to know just how fine he can work him down and have him last; to discern, daily, the effect of the track-work, in order to increase or diminish as the case indicates. These are a few of the important and necessary qualifications of a trainer. A rubber is not necessarily a qualified trainer, and yet, some trainers are better fitted for rubbers.

TOE WEIGHTS AND SIDE WEIGHTS.

WHAT THEIR USES ARE.

Toe-weights, or the novel and ingenious idea of placing a weight upon the toe of a horse to change or improve his gait, is extensively employed in converting double-gaited horses, and in the primary education of a young trotter. Certain it is that their use is one of the most remarkable aids yet introduced to assist in the development of the trotting horse, particularly the young ones. This is now conceded by nearly all intelligent trainers, the principle, in a modified form, having been adopted by them. By their use any racker, that is, single-footer, can be made to trot square and level, and a majority of pacers can be converted into trotters; a dwelling-gaited horse can be quickened, and the stiff-legged action, pointer, peculiar to the thoroughbred, can be changed so as to cause the horse to fold or bend the knee to any extent desired. Judicious shoeing and toe-weights will effect a remarkable modification of the exhausting and awkward gait known as paddling or winding, and the ancient, stiffened-up campaigner, who, from soreness, is prone to "mix up" in his work, can be kept square and level; and many hitchers, from the use of toe-weights forward, causing a changed condition of gait — longer stride — will sympathize with the change, and quit this, the most annoying habit trainers have to contend with. Toe-weights are, in regulating the gait of the horse, what the governor is to a steam engine. There are many horses with a clean, open, level gait and level heads, that, in spite of your best efforts, make no decided improvement in their work, and seem finished. We have seen remarkable changes and improvement in such animals by the mere application of weights. In rectifying defective action, and removing acquired habits of faulty action, they are indispensable.

WEIGHTS OF COMPARATIVELY RECENT ORIGIN.

Ten years ago toe- and side-weights were but little used and were imperfect and crude. Hiram Woodruff, the most noted and skillful trainer of his day, was unable to convert a pacer and make a

reliable trotter out of him. To-day, boys, by the aid of toe-weights, can accomplish what a veteran trainer could not do a few years ago without their aid. Had a man told Mr. Woodruff in his day, that a pacer would be converted that would trot in 2:15¼, as Smuggler has done, no doubt he would have set him down as a subject for a lunatic asylum.

WHICH IS BEST, WEIGHTS OR HEAVY SHOES.

There is no doubt but what toe- and side-weights are better than heavy shoes. Heavy shoes must be wide and thick, and require larger nails to secure, often injuring the foot. Besides it takes less weight applied at the toe to accomplish the object than if applied to the bottom of the foot. The weights have also the advantage of being increased or diminished as necessary, and may be omitted except when speeding, which is an important item.

HORSES WHICH CARRY WEIGHTS.

Smuggler now wears on his front feet twenty-ounce shoes with six-ounce weights, but formerly carried nine. Nettie, sixteen- to twenty-ounce shoes, and ten- to twelve-ounce toe-weights, and formerly had to carry more weights to make her to square away. Mazomanie now carries twenty-ounce shoes, and from six- to eight-ounce weights, but when first converted from a pacer, it took three and one-half pounds on each front foot to cause him to trot. Albermarle has fourteen-ounce shoes and ten-ounce weights; Scotland carries sixteen-ounce shoes and six-ounce weights; Nil Desperandum, fifteen-ounce shoes and four-ounce weights; Lew Scott, sixteen-ounce shoes and four-ounce weights; Grafton, who is now owned by Mr. Robert Bonner, was formerly a single-footed saddle horse, and it took one pound and one-half toe-weights to enable him to trot, yet, when he had been trained down to 2:15, it only required six-ounce weights to balance him. Banquo, General Grant, Silversides, Lady Snell, Elsie Good, Edwin Forrest, Lewinski, and hundreds of other horses are using weights as a necessity.

PRELIMINARY DIRECTIONS FOR THE USE OF WEIGHTS.

No injuries are ever caused by the proper use of properly-made weights, rightly applied. The amount to apply to each horse can only be determined by experience, and the driver should commence with a light weight, and increase at the rate of two ounces until the desired result is obtained. No child ever sprang from its cradle and commenced to walk, neither can you expect a horse to learn to trot without patient assistance and support from the driver. After he has properly balanced himself and become accustomed to trotting, the weights can often be reduced or even removed. If the weight is placed too low on the wall of the front foot, it is liable to be struck by the toe of the hind foot and detached, throwing the horse out of balance. This is not so in all horses.

AMOUNT OF WEIGHT TO USE.

The amount of weight that different horses may require, must be left, in a measure, to the good sense and judgment of the trainer. It is often necessary to experiment with different weights; in all cases use as light ones as will effect desired results. It is seldom necessary to use over a pound on a racker, that is, single footer; often ten or twelve ounces is sufficient; but if the subject is hot-headed and persistent, load him until you get him into a trotter's form, if it takes two-pound weights; as he acquires the habit of trotting square and level, gradually reduce the weights. The "stiff-legged" gait usually requires from twelve to fourteen ounces. Shoeing is a very important factor in this matter of gaits, the weight of the shoe and its form. We will refer to this again. The above weights are based upon about a fourteen-ounce shoe. The slower the gait, as a rule, the more weight a horse can carry without undue strain upon the tendons, that of course must check the forward movement of the foot. The more rapid a horse trots, the greater is the force with which the foot is thrown forward, and the greater the tension of the muscles that, contracting, cause a corresponding rapidity of the return of the foot, creating an increased knee-action, or tendency to fold or bend

the knee; consequently, when a horse is getting his speed, that is, acquiring the trotting form of action, weights can gradually be reduced, and in many cases dispensed with.

SIZE OF HORSE NO CRITERION AS TO AMOUNT OF WEIGHT.

Many seem to have concluded that a horse wants to be weighted in proportion to his size. This is a mistaken idea. Lew Scott, Silversides, Mazomanie, and Smuggler are all horses that measure sixteen hands and upwards, and are all strong built, yet they trot with from three- to eight-ounce weights, while Nettie, the smallest trotter that has ever trotted in 2:18, only weighing 850 pounds, and being scant fifteen hands, had to carry one and one-quarter pound shoes and twelve-ounce toe-weights to enable her to make her best time. Small as Nettie is, she can carry this amount of weight and last out her races with the best horses on the turf. No trainer can be successful in using toe- and side-weights unless he has from four to six pairs of different hefts of weights to experiment with. When a horse is short of work and rank, it may require eight-ounce weights to steady him in first heat of a race, but after the first heat four to six ounces may be all he may want. A horse will not want so much weight when trotting on a heavy track as he will when trotting on a smooth, hard track. As the shoes wear it is necessary to have different hefts of weights so as to replace the amount lost by the wear of the shoes.

CONVERTING A PACER INTO A TROTTER.

Strap-hobbles may be of benefit, but are apt to make the horse sore. Toe-weights will give better results than all other contrivances, pole and sail tracks thrown in. Sometimes a little accident will make the pacer take the trotting gait after weights are applied. The trainer of Mazomanie increased his weights to three pounds and one-half on each front foot and still he would not trot. He desparingly drove him into a field of heavy red clover along side the track, when he struck a trot at once. After trotting him a few turns in the clover, he pulled him out on the track and gave him his head, when he trotted a full mile in 2:31 without a break or skip. A few trials of

this kind soon established the habit, dropping as low as 2:24, and reducing the weights to two pounds. It is not a good policy to score or brush converted pacers too soon after they go to trotting, but wait till the gait is thoroughly established. Brushing horses does more to make pullers than any other course.

TO CORRECT SINGLE-FOOTING.

If your colt is of a highly nervous organization, or from a family of saddle-gaited rackers, evincing a disposition to make speed fast, and your driver quite as anxious to get the speed as the horse to give it, you will very likely find your colt some morning in his work rush from his trot into a single-foot or rack, a habit, once acquired, difficult to overcome without toe-weights; chances are that in his mixing he has cut his quarters; boot him and then weight him, and with good judgment you will soon have him all right. Some old horses can be sent to a break, and "shook out" of this gait into a trot, but with young horses, better take them back. One of the chief causes of making single-footers and broken-gaited horses is severe bits.

TO BREAK HIM OF A HITCHING GAIT.

One of the most troublesome, easily acquired, and annoying habits that come to plague a trainer is that of hitching. Nearly every writer says it is caused from overwork, and advise a "let up and rest." Not in one case in twenty is this case. Your colt has been working level and making speed, as he increased his speed he has changed in his gait ("form of action"). Presently you discover he is passing one hind foot outside and the other between the two forward ones; he becomes unsteady in his work and breaks, commences to hitch and pull. What's the matter, overwork? No! It is because he is hitting his forward toe against the wall of the hind foot, scalping, or the toe is hitting at the coronet where the sensitive plantar nerve enters the foot, causing a painful speedy cut, or is hitting his pasterns or shins behind. Remove the cause by booting, put side weight on foot he is short in his action on, and your colt will quit pulling, and, if your trainer has good "horse sense," he will soon have him going square and level.

WHAT TO DO FOR PADDLERS.

Most paddlers have plenty of action, and should be shod light, as their winding gait is very severe on the tendons, if fast. For a colt that shows a disposition to this gait, I prefer the rolling motion "Roberge" shoe, for the reason that if they can go over the toe so much more easily than over a level surfaced shoe or high toe caulks, there is less inclination to paddle.

TO CORRECT ELBOW- AND CHEST-THUMPERS.

This is caused by excessive knee-action, produced by heavy shoes, which are necessary to enable him to trot fast. Few horses who trot in light shoes injure themselves in this way, if properly shod. Weight applied to the bottom of the foot causes greater flexion of the pastern joint, which results in arm and chest bruises. Almost every case can be cured by shoeing with a light shoe, and applying toe-weights. A rolling-motion shoe sometimes aids, yet the shoe has to be made heavier to get the motion, say eight to twelve ounces, while the foot has to be prepared by cutting down the heels and toe, which is objectionable. Boots are not satisfactory, as they chafe thin-skinned horses.

SCALPING, CUTTING AND BRUSHING.

A horse scalps the coronet by striking this part against the grooved surface of the front foot near the toe. Such horses are close gaited. Some cut themselves on the inside of the hind fetlock joint, a little in front. This is produced by coming in contact with shoe of front foot, on the same side, on the outside quarter. Brushing the shins is produced in same manner, only higher up. It may hit the bottom of the shoe at the outside quarter, or it may be nearer the toe; or, in some instances, the shin is brushed by the outside wall of the hoof or the clinches. These should be looked to and kept smoothed off and let into the hoof. To remedy this evil, use lighter shoes, and use toe-weights. Have the ground surface of the shoe made half round without being creased. The nails should be counter sunk into the shoe and rounded off even with the web. A creased

shoe never should be used. A shoe made in this way cannot cut or bruise the skin. Boots of all kinds should be dispensed with, if possible, and this could be done, if more judgment was shown in shoeing and weighting.

BRUSHING IN FRONT AND KNEE BANGING.

The part of the shoe which does this injury is on inside of the toe near two first nails. Sometimes the wall of the hoof and clinches inflict it. The clinches should be let into the hoof, and the edge of the shoe beveled off on the inside. Some horses brush higher up as their speed is increased. Few who are shod with light shoes do this. If you are using heavy shoes, substitute light ones and use toe-weights. By adding more weight at the toe, a horse can be made to carry his foot above the knee if he hits his knee in speeding, and thus pass without brushing. Patient experiment is essentially necessary.

BEST BITS FOR TROTTERS.

THE IMPORTANCE OF A PROPER BIT.

Unquestionably the bit is a very important factor in the proper training of a trotter, as well as in the driving of the developed horse. Many devices are offered the public, each claiming peculiar virtues, yet the troubles they are lauded to obviate, generally arise from another source, and can be cured by seeking the cause. Often the habit of pulling is caused by some form of speedy-cut, and while a severe bit may bring temporary relief, it will often result in a more serious trouble — the breaking of a horse's gait. Severe bits are the fruitful cause of mixed and broken gaits, and are worse than useless, except upon some wild and vicious brute.

THE BEST KIND OF BIT TO USE.

It is immaterial what form of bit you use, whether straight or snaffle, if it fits the horse. This can only be told by experimenting. An occasional change of bits is often beneficial. In experimenting

we would recommend that a variety of sizes be used, running from small to very large, and not a variety of shapes. The bit which suits the greatest number of horses is a half-cheek, large snaffle, jointed in the middle, the same thickness its entire length, with a slight curve from joint to ring. The bits which are large at the ends and small in the center have a tendency to pinch and crowd the sides of the mouth, and often irritate a tender-mouthed horse, and make him restless and unsteady about the head. A snaffle bit, properly made, is not as severe on a horse as a straight bit, and never will lacerate the horse's mouth, if a good driver sits behind. It takes a firmer hold of the jaw, and the skillful driver, by a uniform pull on both lines, works and steadies the horse by the jaw, and does not twitch the bit through the mouth. The snaffle arches and gives more freedom to the tongue, and is not as hard on the jaw, as a straight bit.

Another style of bit is the bar bit, with or without a slight curve from end to end. This is an excellent bit for tender-mouthed horses, who seem to be afraid of the bit, but must be of large size. The straight bar bit is an excellent bit for a colt, unless he fights and pulls, when a snaffle might be tried.

When an overdraw check is desired, the fine bar bit as the second bit, is the best. By enclosing the two bits in a rubber tube, made by sewing together the ends of a strip of thin bandaging rubber a little narrower than the width of the bits, leaving about two inches play, you can prevent him carrying his tongue over the bit, or out of the mouth. This is better than a plate bit.

A puller can be controlled by using a four-ring bit with a strap over the nose connecting the inside rings, and a strap which can be lengthened or shortened, running from the nose piece to the top piece of the bridle. If the rings chafe, use leather washers next the cheeks. This is Dan Mace's plan for a hard puller.

Bits should be made of polished steel, and tested for strength. Sometimes a change of lengths is desirable, yet a bit should never extend several inches outside the mouth in driving.

Why should there be any necessity for the invention of so many kinds of bits, etc.? Why do horses put their tongues over the bit, or

out of their mouths, or drive on one rein? In almost every instance, in our judgment, it is the fault of the man that broke the colt, or the abuse of the over-check in his early education. Colts do these things in the first place to get relief from torture, and it finally becomes a habit, and these habits, when formed, are very difficult to break up. We have found that, in order to have them act well, and do cheerfully what is required of them, we had to make it comfortable for them to do it. All bad habits in horses are the direct result of ignorance and abuse.

Few men who have the breaking and training of colts understand the necessity of checking, at their inception, any bad actions that may become fixed habits from a little repetition. They should be corrected at once, and effectually. Search for the cause, and the remedy will be more readily and effectually applied.

CHAPTER III.

BREAKING COLTS AND VICIOUS HORSES—SHOEING.

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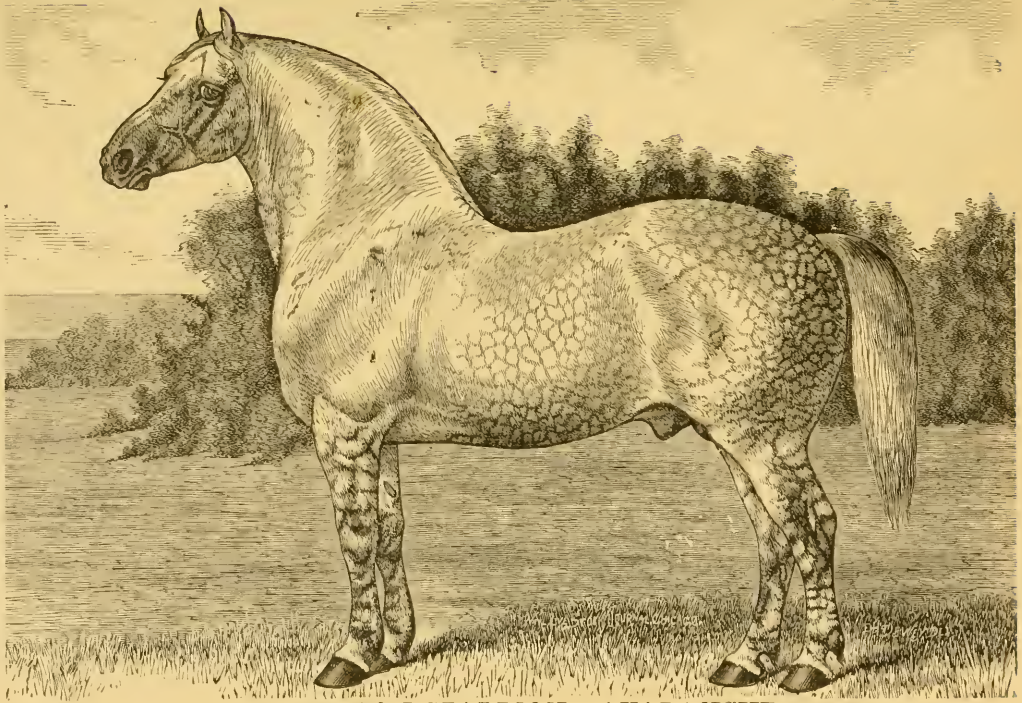
SHOEING INTELLIGENTLY AND TO CORRECT EVILS.—First facts and principles—Construction of the foot—Natural angle of wall of hoof—Necessity of preserving it—Natural foot never shod—Proper method of trimming the foot—Preparing the foot for the shoe—Amount to remove from heel and toe—What to do about sole and frog—Pernicious practices—Fitting the shoe to foot—How necessary it should be well done—Nailing it on—Shoeing to prevent interfering—How to prevent over-reaching and clicking, etc.—How Dexter is shod.

BREAKING COLTS AND VICIOUS HORSES.

WHAT TO KNOW BEFORE BREAKING A COLT.

Fear is the motive power which causes the colt to resist breaking. It is natural for him to run away from anything he fears, to kick against an unknown object at his heels, to pull his head out of the



PERCHERON STALLION, "AVALANCHE."

halter as from a trap, and to strike and bite if cornered and of a vicious disposition. His fear is governed by his sense of touch, sight and hearing, and it is through these senses we obtain a mastery, and at the same time remove his fears of the halter, the robe, the harness and the wagon. These are the fixed laws which govern the actions of all horses, and the breaking of a colt is merely the educating of him not to fear the working apparatus, yet to fear and respect his master and to obey his commands as soon as he has learned their nature. Each one of these senses has to be educated before the horse is broke. For instance, he becomes accustomed to the closed umbrella by letting him touch and feel it with his nose, yet will be terribly frightened if it is suddenly opened; and still again, after this fear has been properly removed, by the click of the spring will jump and shy.

HOW HORSES ACQUIRE VICIOUS HABITS.

All vicious habits and tricks have been learned and acquired from previous contests. If the colt had been properly mastered, they could have been eradicated before they became habitual. A colt that breaks his halter, kicks himself loose, or scares you out by fighting, will try it again with increased zeal. He has now learned how to do it. Don't let them begin, but if they do, take it out of them before you stop. You must conquer them or they will you. There is no partnership in the matter; you must be master, and yet you must do it by firmness and patience. There are no advantages gained by the brutal use of the whip. There are advantages enough to be taken of the colt, which will soon cause him to yield, because he finds himself powerless against you.

HOW TO USE THE WHIP IN BREAKING.

The only object in using a whip is to excite the fears of the horse and make him respect your authority by slight punishment when he does a wrong action. It should never be used as an instrument of revenge, and no man is fit to break or educate a horse unless he can control his own temper. Fear and anger never should be felt by a good horseman. To a horse merely wild and timid, the whip should be but little used; kindness will secure his confidence and remove his

fears of you. A severe whipping may excite his passions to such an extent as to forever ruin him as a quiet driver. On horses of fine blood and highly nervous organization, it must seldom be used. Teach the horse by patient firmness, as you would learn a child to walk, talking pleasantly and encouragingly, giving plenty of caresses and an occasional lump of sugar if he does well. He will soon learn to love you, and will do anything you want him to, if he can only be made to understand it.

WHEN THE WHIP MUST BE USED.

Sometimes a colt is of a stubborn, mulish disposition, and may lay back his ears at your approach, or turn his heels to kick you. The trouble with this colt is, he has not fear enough of man to properly respect his authority. It would be "love's labor lost," to try and conquer this fellow without the use of the whip. Use a spring top whip with a good cracker, and give him a few sharp cuts around the hind legs next the body, and speak sharply to him. Make all your actions quickly and sharply. The crack of the whip affects as much as the keen cut astonishes him. Don't whip too much, just enough to scare the bad disposition out of him. Never whip over the body, or go into a pitched battle and whip your horse until his temper is aroused, as he will fight back. It is dangerous and does no good. A few sharp cuts around the legs will so frighten him that he will respect your authority. Caress him more than you whip, but correct him sharply at every evidence of bad disposition, and see that he obeys promptly. Never leave a horse after whipping until he is quieted down.

THE PROPER PLACE WHEREIN TO HANDLE A COLT.

This should be enclosed, or on the barn floor, and twenty-five to forty feet square. This leaves plenty of room for handling, yet confines him within reach and at your mercy.

TO HALTER A WILD COLT.

Take a light pole, ten or twelve feet long, or as long as you can handle to advantage, drive two nails into it about eight inches apart,

the first about an inch from the end of the pole, with the heads bent a little outward from each other. Then take a common rope halter with a running noose, pull the part which slips through the noose back about two feet and hang the part that goes over the head upon the pole between the nails, keeping hold of the hitching part, which must be as long as the pole.

The halter is now so spread and hung upon the stick as to be easily put on to the head. If the colt is not excited or frightened as you extend the halter towards him, he will reach out his nose to smell and examine it; and while he is thus gratifying his curiosity you can bring the slack part under his jaw, and raise the pole high enough to bring the halter over and back of the ears, when, by turning the stick half way round, the halter will drop from it upon the head. This will frighten the colt a little and cause him to run from you; but this will cause the slack part passing back of the jaw to be tightened, and the colt will thus be secured.

BREAKING A COLT TO HALTER.

After the colt has been a little gentled, take the halter in your left hand, and approach him on the near, or left side, pretty well back to his shoulder. Place the right arm over the neck gently, but firmly, and raise the left, with the halter, towards the head. By skillful management you will soon have his head in the halter, when you should allow him a long rope, so that if disposed he may go to the length of the stable without making him pull on the halter. By giving him rope when he goes from you, he will never rear, pull or throw himself, yet you will be holding him all the time, and doing more to gentle him than if you snubbed him and held him up to one spot. In a few minutes you can begin to control him with the halter, then shorten the distance between yourself and the colt by taking up the rope in your hand. When you commence leading him, do not go before, and try to pull him after you, but begin by pulling him very quietly to one side. He will in this way soon yield to a gradual pull of the halter, and when he comes up to you, caress him, and then repeat the operation of pulling him again gently, alternately caressing

and leading him, until you can turn him in any direction you may desire. By such mangement you can soon turn him wheresoever you will, as he will follow a slight pull of the halter, not knowing his power to resist.

After receiving the foregoing lessons, now all that will be necessary to teach the animal to stand without pulling, is to hitch him in an ordinary stall with rope or bar placed across behind, to prevent pulling backwards. In the course of a couple of days this rope can usually be dispensed with. Persons who have not tried breaking in a box stall or limited inclosure, will be agreeably surprised to see how much more control one has, and how much easier colts can be broken in this manner, than upon the highway or field.

BITTING THE COLT.

We are now ready to put on the bitting rig which should be done gently; avoid alarming the colt by all means. A scare at this time will not be forgotten readily. Early impressions are lasting, therefore let them be impressions of kindness and confidence by all means. Rein the head but little above the usual height of carrying, and when all is properly fixed, lead the colt about the stall for a short time, then take him on the road or field and exercise him moderately. When familiar with the bit and rigging teach him the use of the lines. This will most readily be done by turning the colt with the side lines, which are usually attached to the rigging, for the purpose of preventing the head being carried one side, which the colt will insist on doing as soon as the head is elevated much above the natural position of carrying it. Do not extend the time of exercising beyond one hour each day for five or six days.

BREAKING TO HARNESS.

Then attempt the first lesson in driving; we now require the assistance of a well grown boy to hold the halter, not for the purpose of leading, but to prevent the colt turning toward the driver, a slight pull on the halter will prevent this; when once going it's best for the assistant to keep as far as the halter will conveniently admit of from the colt, and slightly behind him. A couple of drives in this manner

will usually enable the trainer to drive the little fellow without any further assistance. Passing the lines through the shaft bearers will materially assist in preventing the colt from turning his head towards the driver; in the attempt to do so the thigh will press against the line instead of the line slipping over the back, thereby giving every opportunity of turning, much to the annoyance of the driver.

DRIVING TO WAGON OR SULKY.

When accustomed to the harness, standing and being exercised in it during one or two lessons each day for two days or a week, according to the disposition of the animal, he may be put into the thills, but neither the traces nor holdbacks hitched. Now let an assistant rock, rattle, and move the wagon awhile, and then aid the trainer to move it forward, while the colt is made to walk slowly, letting him have his head and look at the wagon. Before attaching the traces, at the second lesson in harness perhaps, the trainer on the nigh side, and his assistant on the other, may grasp the thills each with one hand, just in front of the lugs, letting the horse step forward and draw the wagon by the thills, and letting him feel its weight as much or little as desired. He may be backed somewhat in the same way. By his actions, one may easily judge when it will be safe to hitch him to the wagon. The vehicle selected should be one not heavy but strong, and which will run with little noise. One simple thing should be taught at a time, seldom two distinct ideas at one lesson. They should be daily repeated at each lesson until perfectly familiar, and, after each good performance, the horse should be caressed and rewarded. What a horse learns in this way he remembers, and he will quickly exhibit a really remarkable confidence in his master and alacrity to serve him.

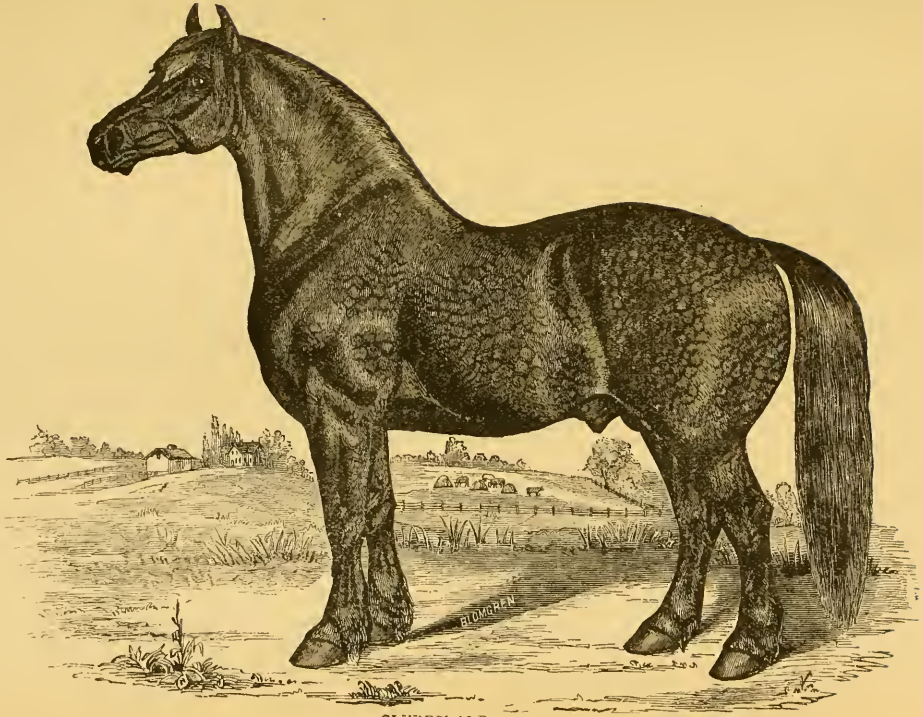
CARE IN DRIVING.

By no means suffer him to start when partially hitched, a bad scare, from improper management at this time, is rarely ever forgotten; this can be prevented by careful and determined management. We will suppose the colt to be hitched to sulky and everything made safe, attach a small halter strap to each cheek of bridle, the assistants,

one on each side, halter strap in one hand and shafts steadied by the other; in this manner they will be able to hold the colt and prevent him throwing his head around to see the vehicle, which in some instances will scare the young animal, until he becomes somewhat accustomed to it, which will be in a short time generally. The driver will have hold of the lines, walking immediately behind the sulky, and will give the first lesson in that position. As soon as the colt goes gentle in a field, take him on the road, where the assistants will only assist by holding the straps which are attached to the bridle. Usually, in the course of thirty to sixty minutes, will enable the driver to get along without help; he is now to be exercised occasionally upon the road, also upon a smooth meadow or other suitable field, being careful that no other horse stock is in the field to annoy or otherwise attract the attention of the youngster in harness. Horses running loose make them impatient and fretful and sometimes quite stubborn. Avoid short turning; this, by forcing the shoulder or neck against the shaft annoys the colt very much indeed, at least until he feels perfectly at home in the shafts. Do not venture to ride upon the sulky until the colt has been driven several times; usually they object more to starting a weight than drawing when once started, therefore, get on when the sulky is moving. When going towards home, stop him occasionally for a moment or two, then start him kindly; in this manner he will soon learn to start without any difficulty. Never drive so far or so fast as to worry or fret; it is while in this worried condition that colts usually learn bad habits—sulking, refusing to go, kicking, or some other practice, much to be deprecated. There are various ways of hitching young horses to break them, to-wit: the plow, wagon, buggy, or sulky. In our opinion the latter is the proper rig. A good strong and light running sulky has no locking of wheels in turning or backing, and furthermore, it is within our power to prevent kicking, in this rig.

BREAKING VICIOUS HORSES.

Occasionally we meet a vicious brute by nature, or worse, made so by injudicious handling. All systems extant for the subjection of



CLYDESDALE.

these animals are intended to accomplish it by getting the horse at disadvantage, when his superior strength becomes powerless. Most of them demand a special apparatus of straps, etc. We give a system below, which takes no apparatus beyond what an ordinary farmer possesses, and by which the ugliest brute can be mastered in the shortest possible time. We have yet to see the horse it will not conquer, and there is no danger of injuring the horse. We have taken the worst horses and have driven them to buggy in an hour after commencing operations.

THE FIRST OPERATION.

Take a short hold of the halter with the left hand, and the hair of the tail with the right; give him short whirls around to the left, which will confuse and puzzle him. He may be a little frisky, but a little management will soon give you hold of his tail. Now tie a firm knot in the hair, close to the fleshy end of the tail, running the end of the halter through above the knot, tie with a half loop, which can be untied by catching the end of the halter. This can easily be done while the horse is whirling around, by a little practice. As soon as tied let him go; he is now hitched to himself, and "a house" or horse "divided against itself cannot stand." The higher-lifed he is, the quicker he will waltz, and sometimes he will get dizzy and fall, but get up again and go on. Keep him moving with a cracking whip, until he shows a desire to stop and rest. The halter may now be shortened, and he started again. If he falls while he is tied very short, it may be necessary to untie before he can get up, and then tie again, but this is seldom. He cannot hurt himself, and this system can be operated in an open lot or barn yard.

THE SECOND STEP TO TAKE.

After the foregoing has been continued until the wire edge has been taken off, we now accustom him to trials and tests of various kinds to take the kick or friskyness out of him. For this purpose we introduce a smooth hickory pole, about ten feet long, with which we smartly touch him in the sides, between the legs, against his heels,

under his tail, and all tender spots, simulating the whiffletrees against his heels, traces between his legs, line under the tail, etc., the horse being tied head and tail and kept going around and around. Each point must be finished before another is taken; that is, when he will bear these tests in one location, try another, until he will bear all this usage without kicking. The amount of work he will bear of this kind before he will give up, depends on his disposition. Well bred horses fight the sharpest and give up the quickest; cold blooded, sulky brutes make a slow and long continued resistance.

FINAL RESULTS.

He can now be rode, the rider jumping up on the off side and reaching over and catching hold of the halter; when the horse quits whirling, straddle him and untie the halter. We never saw a horse buck, or which could not be rode with the halter after this training. After riding he may be harnessed and drove in single harness, when the same tests by pole may be applied, following with hitching to wagon, and the usual steps we have given for breaking colts. At the least signs of viciousness, take him out and head and tail him again. This system is recommended for not only taking the kick out of vicious horses, but is equally good for balky animals, etc. It can be modified so as to be easy, and as a test for horses of unknown temperament, or it can be increased to make the worst brute as mild as a May morning. In cases of this latter kind, it is best to give him a short waltz every time before you hitch up, for a month, to thoroughly subdue him.

PULLING ON THE HALTER.

This is a habit which the horse acquires by being hitched with too slight a halter. By once breaking away he will try it again, and if he succeeds once or twice, the habit is fixed, and he will try it as often as opportunity offers. If he has been in the habit of breaking away in the stable, he will not attempt it on the street; if the habit has been contracted on the street, he will be safe in the stable, unless he has learned it in both places. This proves that a horse learns his

vicious tricks; that when he has been successful under certain circumstances, when the same opportunity occurs again, he will try it. The most successful method is to take a half-inch cord, double it, and place the doubled end under his tail in form of a crupper, crossing the two ends over his back, and carrying them forward, one on each side of the neck, through the halter ring, and hitch to the manger or post. One or two pulls will satisfy him, and break him of the habit.

KICKING IN THE STALL.

If the horse is of nervous habit, always give him warning, by voice, before you approach. Never step up behind him suddenly and startle him. If it is inherent viciousness, better give him to understand that you are master, by giving him a few lessons for subduing just such cases. Then, when you step up to go into the stall, tell him sharply to "stand over," watching your opportunity to glide up to his head and take hold of the halter. You must not do this until you see him quail a little under your eye. If the horse is treacherous, better have a looped cord over his nose running back out of the stall, and as you step up and give your command, give it a sudden jerk, which will distract his attention and give you the desired chance to slip in. Not the least sign of fear must be shown in action or voice. The horse is an acute observer in this direction.

KICKING WHILE SHOEING OR GROOMING.

A thin-skinned horse will often show irritation, and offer resistance to the harsh use of the curry-comb on certain portions of the body. All that is necessary is to substitute the brush, or be more careful in its use. If it is from a spirit of viciousness, tie a cord round his neck and pass a loop around the lower jaw, holding the other end while grooming. At every attempt to kick or bite, give it a sharp pull, and he will soon give it up.

It is a more serious matter to break a horse of being sensitive about having his feet handled. Never take a horse of this kind to the smith's shop to have him trained amid all the new, and to him,

strange sights. Learn him at home to have his feet handled and rapped on. If he is vicious or wild, give him a lesson or two by our method of tameing, which will take some of the vim out of him; then learn him to have his fore feet handled, sticking to each one till he will readily yield. If he resists strongly, give him another lesson. Sometimes they will yield after one lesson, and allow the hind feet to be handled by merely strapping up a fore leg; again we have seen a horse notoriously bad, stand by merely having the tips of his ears tied together. The explanation of the reason why these simple matters so affect a horse, is, that he cannot think of two things at once, and will not balk or kick if you can distract his attention away from the provocation. Sometimes it is better to attach a piece of webbing to his hind foot, and thus handle it at a safe distance. It can be easily raised off the ground by carrying the webbing up over the back, round in front of the breast and back over the back into your hand, from which spot you can operate safely and easily.

HORSE PAWING IN THE STABLE.

We have tried a variety of means, among others the strap and chain, but all failed. Recently we devised a plan which has succeeded to our entire satisfaction. We made a frame four feet long and of sufficient width to reach nearly to the top of the manger, from which we suspended it, allowing it to reach to within about ten inches of the floor. We boarded up the sash, or frame, in order that he could not get his feet over the lower bar, which was made of a round stick two inches in diameter. The act of pawing sets the machine in motion, causing it to strike against the shins, which so disgusted him that he very soon gave it up entirely.

RUNNING AWAY.

There are many apparatuses to prevent this dangerous evil, yet a man does not want to always travel with a block and tackle. The great trouble is, that the horse does not possess a governable mouth, nor have a properly established habit of stopping when the driver says "whoa." In fact half the horses never are thoroughly broken. They are all right so long as every thing goes smooth, but when the

hold-back breaks, or something extraordinary happens, away they go, and the driver is powerless to stop them. The first thing to do with a horse of this kind, is to learn him to pay attention to the bit and the command of the driver under all circumstances; to have this become a fixed habit, merely put him into a single harness, placing the lines through the lugs for the thills, instead of the turrets, in order to have a purchase around his buttocks, so he cannot turn his face toward you. Now drill him for an hour each day, for a month, turning to the right, to the left, backing, going ahead, and stopping instantly. When he turns, don't let him take half an acre, but bring him sharply around, and as sharply back, cracking him with the snapper of the whip. Make him stop, instantly, at the word; if he don't, give him a sudden check. He will soon learn to stop at once, even if the lines are on the ground, and you away several rods. This course will cure it every time, by gaining control of the horse.

BREAKING BALKING HORSES.

Often this has been caused by more guilty drivers of high-strung, nervous horses. An opposite course of patience, and care in not overloading will correct the evil. If the habit has degenerated into viciousness, it may be necessary, every time the animal shows signs of balking, to give a lesson or two by our system, to show who is master, and there will be no further trouble with the worst cases.

The society for the Prevention of Cruelty to Animals puts forth the following rules for the treatment of balky horses:

1. Pat the horse upon the neck; examine the harness carefully, first on one side then on the other, speaking encouragingly while doing so; then jump into the wagon and give the word to go; generally he will obey.

2. A teamster in Maine says he can start the worst balky horse by talking him out of the shafts and making him go round in a circle until he is giddy. If the first dance of this sort does not cure him, a second will.

3. To cure a balky horse, simply place your hand over the horse's nose, and shut off his wind until he wants to go.

4. The brain of a horse seems to entertain but one idea at a time; therefore whipping only confirms his stubborn resolve. If you can, by any means, give him a new subject to think of, you will generally have no trouble in starting him. A simple remedy is to take a couple of turns of stout twine around the fore leg, just below the knee, tight enough for the horse to feel, and tie in a bow-knot. At the first cluck he will probably go dancing off, and, after going a short distance, you can get out and remove the strings to prevent injury to the tendon, in your further drive.

5. Take the tail of the horse between the hind legs, and tie it by a cord to the saddle girth.

6. Tie a string around the horse's ear close to the head.

TO PREVENT JUMPING.

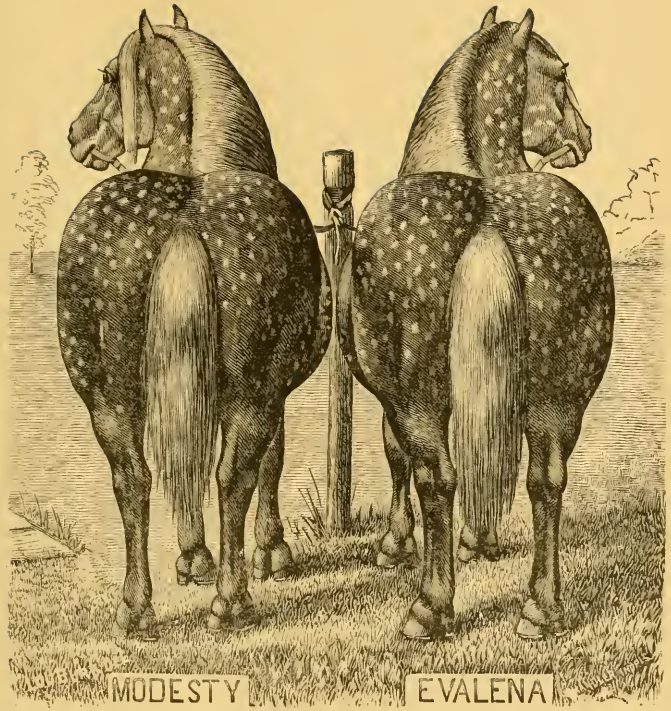
This can easily be done, by taking a piece of leather broad enough to cover the eyes, so that the horse cannot see directly ahead, and leaving on the head part of the halter, attach it at the top and bottom, to the halter, completely covering the front of the face. The horse won't jump if he can't see where he is going to alight.

Or, take a good leather surcingle, two and one-half inches wide, to which fasten two rings, so that each will be just behind the fore legs of the animal when the surcingle is adjusted. Take two good straps a little longer than hame straps, which buckle into the rings and around the fore legs. The animal will not jump, but can walk without difficulty.

Another mode: Fasten the rings on the surcingle well up on the sides of the animal. Through these pass a rope, with a strap on each side to buckle around the animal's legs just above the hoof. This will prevent jumping.

BREAKING OF FEAR OF ARTICLES.

There is no horse but what with a little patience and understanding, can be taught in a few minutes not be afraid of robes, umbrellas, etc. The tip end of the nose is the finger of investigation of the horse. Until he touches an object with it, he is uncertain what its


MODESTY
EVALENA

character is. It is not entirely for the purpose of smelling of it that he applies his nose, but to touch and feel it. To break a horse of fear of an article, you have got to educate three senses, feeling, seeing, and hearing, and he is not entirely broken unless all are familiarized. Instead of taking the robe and going toward him, vainly trying to get it to his nose, start away from him, leading him by the halter. There will be no trouble about his following. He will gradually be brought nearer, where he can touch it and examine; then educate his sight, by getting it into different positions; then his hearing, if it have any sound. By this method, there is no horse but what can be broke in a few minutes of all fears. But it must be remembered that the horse has to be broken, as it were, on every side, and all over. You may have him perfectly docile to all appearance from in front, but if it is raised over, or behind him, he will be as much alarmed as ever. It does not follow that a horse being broke to have an umbrella rubbed over, or even raised immediately over his head, will not be alarmed at it if carried in a buggy behind him. He must become accustomed to seeing the offensive article in every conceivable position, and this must be done by degrees and several lessons.

HORSES CHEWING BRIDLES.

Mix bitter aloes in a solution of gum arabic. Rub it on the part of the bridle that the horse is in the habit of chewing, and he will cease depredating.

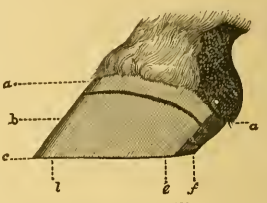
SHOEING THE HORSE.

A FEW FACTS REGARDING ITS NECESSITY.

Shoeing is a necessary evil, for without it the horse would become foot-sore from the wearing away of the horn faster than nature produced it. It is an open question whether we do not shoe too much, especially among the farmer's horses. The question is being tested in England, whether it cannot be dispensed with in a great

degree, and nature depended on to harden the tenacity and resistance of the hoof to the demands upon it. If it could be avoided, nine-tenths of the diseases of the feet and limbs would disappear.

CONSTRUCTION OF THE FOOT.



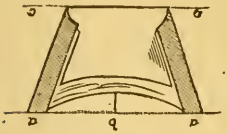
A FOOT NEVER SHOD.

Every man should understand the anatomical construction of the horse's foot, and put it to practical use. In addition to our explanations in another chapter, which every man should read, we give a profile of the foot of a five-year-old horse never shod. Around the top and encircling it is the frog band *a, a;* the wall of the foot is marked *b,* and inclines back from the toe *c,* at angle of from fifty-one to sixty degrees. This natural angle should always be preserved in shoeing the horse, if disease is to be avoided. The toe of the sole is at *l,* while at *e* we have the inside and at *f* the outside heel. The accompanying illustration represents the ground surface of same foot. The heels of the frog are at *a, a;* cleft of frog *b,* branches of same *c, c;* heels of wall *e, e;* inflection of wall, or "bars," *f, f,* frog *g;* outside quarter *h;* inside quarter *i;* sole *k;* junction of wall and sole *l, l;* and the toe is at *o.* From this it will be seen that the natural foot is as "round as a dollar" on its ground surface, but by injudicious shoeing soon becomes elongated and contracted at the heels. And why should it not, when some people allow a shoe applied more fitted for a plow clevice. The hoof grows by the deposition of new material from membranes secreting horn, which becomes harder as it is pushed downward by the new growth. The wall is formed from the coronary cushion at the top of the hoof, the sole from the membrane covering the lower face of the bone of the foot, and the frog from the sensitive frog or plantar cushion. In its natural state the growth is perpendicularly equal all

SOLE OF SAME FOOT.

around, yet really faster in actual length at the toe, on account of the inclination of the wall. This equal growth may be disarranged by an uneven bearing of the shoe, which will overstimulate one portion to the disadvantage of the balance, finally resulting in change of shape. This fact shows the immense importance of preserving a level, natural bearing for the foot.

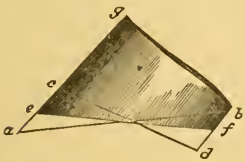
PREPARING THE FOOT FOR THE SHOE.



LEVELING THE FOOT.

The accompanying verticle section shows how the hoof should be pared; that a line crossing at right-angles, the top of the hoof should be exactly parallel with the ground surface; that the horse should stand level in order to have a proper bearing. The second illustration shows the importance of keeping the relative proportions of toe and heel the same, in order to have the weight of the body sustained by an elastic, yet firm and enduring foundation, without any strain on any particular part, but properly distributed. Too much dressing down of the heel at *b*, would increase the angle from *a* to *c*, and throw too much strain on the joint at the fetlock, and the back tendons; while if the toe was extremely pared, the angle would not be sufficient to give elasticity, the bones would suffer from concussions, and the result would be splints and navicular disease. By still another illustration we show the proper way to trim the foot as well as the two extremes. From *e* to *f* would be the correct line to follow; from *a* to *b* would increase the strain on the tendons; while from *c* to *d* would bring the foot into a too perpendicular position. If the conformation of every horse was understood by his owner, and the smith followed his directions, less trouble would be had from defective shoeing. After determining the amount to be removed from toe and heel, it should

PROPER POSITION OF FOOT.



CORRECT PARING THE FOOT.

be done with a rasp. Few men can handle a knife or buttress and produce exact results. Never allow any man to apply a hot shoe to the foot. The wall should be trimmed down level, the bars of the wall are a good guide; the sole should be but little if any trimmed beyond removing the scaly exterior. Never allow the sole to be so pared that it will spring under pressure of the thumb, as some recommend; it is removing the protection of the foot. The frog should be let alone, and the pernicious practice of "opening the heel" should be abandoned, if it has been practiced, for it removes the mechanical support of the heels, and leads to contraction.

TO FIT THE SHOE TO THE FOOT.

The shoe should be fitted to the foot, and not the foot to the shoe. The common practice is to pick out a shoe from a miscellaneous stock, and nail on the one which comes the nearest. Is it a wonder that we have contracted feet and navicular disease. It should cover the crust or wall all around the foot, and the heels should not extend straight back from the quarters, which are the weakest parts of the wall, making a wedge of the heel of the foot between the heels of the shoe, causing contraction. Let the shoe fit the wall to a hair's breadth; if drawn too far in, it will cause corns by bruising the inside heel of the sole. In fact, the proper shoe is but an extension of the wall of the hoof, made of harder material for its protection. A shoe without calks is the best, as it gives a level bearing, yet calks cannot always be dispensed with. It should be the same thickness all round, and only sufficiently heavy to endure the weight of the horse. Too heavy shoes require very heavy nails, which are injurious. The web should not be very wide, and is better if hollowed out on ground surface, as it gives a better hold, and is nearer the natural shape. The surface applied to the foot should be perfectly true and smooth, so that a perfect union can be made without excessive number of nails, or tightly clinching. It should make a waterproof joint, forming, as it were, a part and parcel of the wall.

NAILING ON THE SHOE.

If the shoe fits, there will be no necessity of setting it back and chopping off the toe. One of the worst cases of laminitis we ever saw was caused in this way. It is better to put only three nails on the inside, near the toe, and all forward of the quarter, and four on outside, in same manner. One nail may be omitted in fore feet in dry weather on road horses. These will keep the shoe on as long as is desirable. Horses are not shod often enough, for by leaving on the shoe until the growth of toe has carried it forward, the heel rests on inside heel of sole, and corns are the result. If shod in this way, contracted feet will never result from the shoeing. The nails should not be clinched too tightly, and the clinches should be smoothed off close, or even let into the hoof if the horse brushes. The rasp should never be applied to the wall, as every stroke brings away the most important part of it, which prevents evaporation, and preserves the interior from injury.

SHOEING TO PREVENT INTERFERING.

In addition to our instructions under toe-weights, we will add a method of preventing ordinary interfering. It will never do to make the shoe thicker in one part, or to trim the hoof to any extent to relieve it. The shoe is to be made the same thickness all around; the toe-calk is to be set over its entire width on the inside; the inside heel should extend straight back from heel of foot; the outside heel is to follow closely the wall of the foot. It is also a good plan to trim a little of the bottom of the wall off, from the outside quarter around nearly to the toe, the rest of the wall being pared perfectly level. The calk on the inside heel should have the width parallel with the web of the shoe, especially on the hind foot.

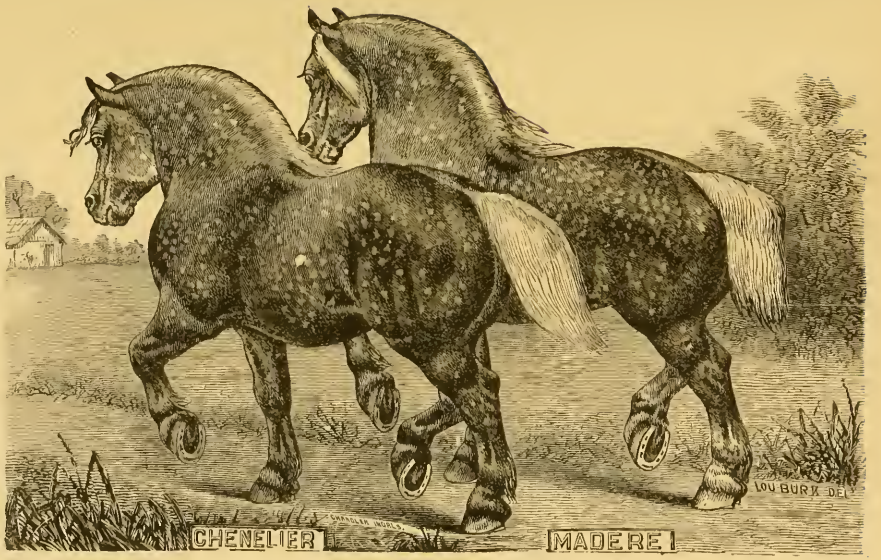
TO PREVENT CLICKING.

If the shoes are made a little heavier in front, light shoes behind, it will give more knee action, and carry the front feet out of the way. If this does not succeed, make the hind shoes thicker at the toe, gradually diminishing toward the heel, not trimming the toe of wall

so much in front. It will cause a slight delay in hind feet going over the toe, which will allow the front feet the time necessary to get out of the way.

HOW DEXTER IS SHOD.

Each shoe is carefully balanced. The surface which comes in contact with the ground slightly curves from heel to toe, so that when the horse is standing firm the principal weight is borne by heel and center, no heavy pressure being felt upon the toe. Just as a line drawn from the heel to the toe of a man's boot would demonstrate a slight curve, so is the natural curve given to each of Dexter's shoes. When a man walks, there is a rising sloping action, from heel to toe, and when a horse is trotting there is a rolling motion from the back part of the hoof to the front. Acknowledging the principle to be correct, it stands to reason that a horse will gather more quickly and with less friction if, instead of the heel and toe being forced to the same level, the former is raised a little higher than the latter. To secure exact proportion to this curve, Mr. Bonner takes each shoe and places it on the smooth surface of a marble slab, and weighs it with a critical eye. In the toe of each shoe a slight excavation or sloping indenture is made for the purpose of giving firmness to the step of the horse. By the force of concussion the soft earth is forced up into this excavation, so that in raising from heel to toe the shoe does not slip backward. This sloping indenture must be carefully proportioned to the size and weight of the shoe, for otherwise it might create friction and prove a positive drawback instead of an assistant. This mode of shoeing certainly worked well in Dexter's case, for the marvel is still a marvel, and all of his recent performances, which have so much astonished the world, have been made in shoes constructed after the pattern described.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CHAPTER IV.

MISCELLANEOUS INFORMATION FOR HORSEMEN.

CONTENTS OF CHAPTER.

TO EXAMINE AND BUY A HORSE.—What is a sound horse?—A serviceable sound horse—When a warranty becomes a fraud—Fitting up a horse for market—Precautions about purchasing—How to examine a horse—The eyes, feet, limbs, and body—General formation to be avoided.

BUILDING STALLS FOR HORSES.—Size of stalls—To slope the floor yet have it level—An ingenious and practicable method—Why horses back into the gangway—The more sensible remedy.

CARE OF THE HARNESS.—What destroys it—Care when it comes in—Cleaning and oiling—To give it appearance of new leather—A water-proof varnish—Place to keep it.

SPORTING TERMS AND EXPLANATIONS.—What a thoroughbred is—Length of the Derby, Oaks, and St. Leger races, in England, and fastest time won—A handicap, steeplechase, hurdle, and stake-race—A sweepstake and purse race—Play or pay bets—Measuring a runner's stride—A trotter's stride, and length of stride of some horses—When a filly becomes a mare—A colt a horse—Weights to carry in a race.

HOW TO LAY OFF RACE TRACKS.—MILE TRACK—Amount of land necessary—How to lay it off—Place to set the distance posts—The starting point.—HALF MILE TRACK—Amount of land and directions for measuring.

RECORD OF TROTTING HORSES.—Record of all horses in 2:30 class or under—Breeding and description of horses.

TO EXAMINE AND BUY A HORSE.

WARRANTING A HORSE SOUND.

There is nothing more difficult than to find a horse technically sound. In general phraseology a horse is considered sound if he is serviceably so. A good deal depends on the way and manner in which it is stated. Blemishes are not always indicative of unsoundness.

In a legal sense, no rule can be laid down, as juries have so disagreed amid conflicting evidence, that few authorities can be quoted, and it is more difficult to tell just where the warrantee ends and fraud begins. If a man specially warrants a horse to be gentle and true, and he proves not, he must give redress. If it be proven that he knew the facts, it is a fraud, and should be treated as such. It is always best to ask very particular questions and insist on direct answers.

Many a horse, when fitted for the market, has a fine look to a common eye, when in fact it is second rate, or perhaps nearly worthless. So, also, a horse in its natural state, especially if it is in flesh, may look well to an inexperienced eye, and be at the same time an inferior animal. Probably in no article of trade are persons so often deceived as in the purchase of horses. So risky is this, that many prudent buyers never purchase except on a trial of a week or more, and we would advise all who do not know how to select a good horse to adopt this course. By grooming and using a horse a few days, almost any one can tell about what manner of horse it is.

HOW TO EXAMINE A HORSE.

In buying a horse, particular attention should be given to the eye. It should be clear, stand out round and full. The eyebrows and lids should be free from bunches, and there should be no swelling under the lower lids.

We would turn from a horse that has a dull, sunken, flat eye. In nine cases out of ten there is trouble connected with it. Either the disposition of the horse will be bad, or he will be lazy, or his eyes will fail. A good way to test the present condition of sight is to lead

a horse out of a dark stable into a strong light. If he knits his brow, throws his head up as if to get more light, acts as if he wanted his glasses to see clearly—stand from under, you may be sure he has bad eyes. The feet should also be carefully examined. A horse with bad feet is little worth. A good foot is smooth, tough and solid. The heels firm, (not spongy,) the frogs dry and the soles shallow. See the foot is a good one. The shoulders should be of medium size for common use, as then you have good speed and durability.

The limbs should be clean, free from splints, wind-galls, spavins and tumors of all kinds. Should look as if made for the body. In movement, the fore legs and shoulders should seem to have but one one action. If you want a good horse, look well to this.

The body should be well formed, back straight, and the hips lower than the withers. See that the breathing is natural, and that there is no uncommon motion under the short ribs. A broken-winded or heavey horse, unless resined, nearly always shows this. A horse with a large, fleshy head, and thick neck, also one with fleshy legs, should be rejected. A lame horse, that "has been lame but a day or two," from running in the pasture, or from the prick of a nail, should be looked well to. Better wait till he gets well before you buy.

HOW TO BUILD STALLS FOR HORSES.

This is a very important matter, as many times the wrong construction of a stall will, in time, injure a valuable animal. They should be from five to six feet wide, according to the size of the horse, and about ten feet in length. Have the plank of the floor three inches lower at the rear end. Take strips of plank two and one-half inches wide, and three inches thick, and saw them through diagonally from corner to corner, end to end, so that you will now have two strips two inches and a half wide, and three inches thick at one end and nothing at the other. Nail enough of these strips, one-half an inch apart, with the thick end at lower end of the stall, and the thin end under the manger, and you will have a level stall well drained,

which not only saves bedding, but be a safe and comfortable stall for your horse. Why do horses back out of the stall into the gangway? It is because the slanting plan of the usually built stalls tire and strain the tendons of the legs, and they seek to find relief by backing down out of the stall. Instead of following the usual mode of slapping the horse with the shovel to break him of the habit, use a little reflection and remedy the plan of your stalls. If you will try this plan you will try no other.

CARE OF THE HARNESS.

The use of a harness does not as a general thing injure it as much as the lack of giving it the proper care. It is soaked with water and covered with mud many times during the year, and often hung up out of proper shape, and allowed to dry so. Leather to be durable must be kept clean, and occasionally receive a good coat of oil. It is a good plan to wipe the harness with a moist rag when it comes to the barn covered with mud, and also to see that it is in good shape when put up. It will not require oil near as often when attention is paid to it in this way, as when neglected, for clay mud appears to destroy the life of leather if allowed to dry upon it. No vegetable oils should be used, unless it be castor-oil, for they are hardening in their effects, and of course injurious.

Nothing is better that we have ever used than neat's-foot oil, and it can always be obtained as handily as any other oil.

Take the harness all apart, unbuckling every strap, and wash each piece with a cloth or sponge in warm castile soap suds, and when nearly dry apply the oil with a woolen rag. Such parts as are most exposed to mud, or located so as to absorb the perspiration of the horse, should receive an extra allowance. After giving it a coat or two, let it remain in a warm room until all the oil is penetrated, but never let it hang close to a stove, or in the hot sun while drying. To give the harness an appearance of new leather, add to a pint of oil about one tablespoonful of lampblack, and about two ounces of beeswax.

If a varnish is wanted to make the harness impervious to water, it can be applied after the oil has partially dried in. It can be made as follows:

Place some shellac in a bottle, and pour in alcohol until the lac is covered, then add a small lump of camphor, and cork up the bottle; in a few days, if the alcohol is good, the lac will be dissolved, and after a good shake and the addition of one-third more alcohol, the varnish is ready for use. It should be put on with a common paint brush. Enough varnish for a set of common carriage harness would cost about ten cents. Harness so treated remain pliable for a long time, for the varnish will turn the water.

This plan cannot be practiced where the harness are kept in the stable, as the odor of the manure will soon destroy the varnish. The varnish if made of good materials, will dry in two hours at the farthest.

SPORTING TERMS AND EXPLANATIONS.

A thoroughbred horse is one which traces back to Arabian blood, through an unbroken chain of six generations. without an out-cross or mingling of cold blood. They are running horses. There are no thoroughbred trotting horses, yet many of them possess a cross of thoroughbred blood. A trotting horse may be well bred, yet not a thoroughbred.

The length of the Derby, in England, is one and one-half miles. The fastest time made was by Kettledrum, in 1861, and Blair Athol, in 1864, each in 2:43. The Oaks is the same distance, and was won by Brown Duchess in 1861, in 2:44, the fastest time made. The St. Leger is one mile and three-quarters and one hundred and thirty-two yards, and was won in 1861 by Caller Ou, in 3:14. These are all English running races for three-year-olds.

A handicap race is where one horse by age, or some other reason, has a supposed advantage of the others, and has to carry additional weight, etc., to even the race. A race across the country,

regardless of obstructions, is a steeplechase. A hurdlerace consists of hurdles or barriers thrown across the course, which the horse has to jump during the race.

A stake-race is one in which a certain agreed sum of money is put up for each horse under specified conditions. Often there is money added by the association or individuals, to the stakes. The winner takes the whole amount, except, as is generally the case, the second gets a small share and the third saves his stake. A sweep-stakes is an event where a stated sum of money is put up for each horse, and the winner takes the pile. The name is frequently misapplied in its use. A purse is a certain sum of money which is offered by an association, or by individuals, and is divided between the first, second and third horses—the first horse getting the lion's share. There is generally an entrance fee of ten per cent. of the full amount from each horse, but the purse does not depend on the number of entrees.

Play or pay, means that the money up goes even if the horse does not start. He must trot or run for his stake or lose it.

In trotting, three foot-prints are measured to get the stride. In other words, from where the foot leaves the ground to where it strikes again. Gloster's stride was twenty-three feet; Goldsmith Maid's, nineteen feet, and Rarus' stride about twenty-two.

In measuring the stride of runners, measure five foot-marks inclusive, which will give the correct stride. According to usage among thoroughbreds, a colt becomes a horse at five years old; a filly becomes a mare at three years of age.

In trotting to wagon or sulky the horse has to carry one hundred and fifty pounds; to saddle, one hundred and forty-five.

HOW TO LAY OFF RACE TRACKS.

FOR A MILE TRACK.

A good mile track can be laid out as follows: Select a level field of forty-two acres; draw through the centre of it a straight line of 440 yards (one-fourth of a mile). On each side of this line, and at an

exact distance of 140 yards from it, draw parallel lines of equal length, so that the space between the two outer lines will be 280 yards. This being done, drive a stake at each end of the centre line, fasten a cord thereto; extend the cord at right angles for 140 yards until it touches the end of the outer line, and then describe with the extreme end of the cord an outer curve or semi-circle between the ends of the two outer lines. You will then have the shape you want; the continuous outer line describing it being exactly a mile (1,760 yards) in length, divided into four sections of a quarter mile (440 yards) each, and inclosing forty-two acres of ground. From this outer line of track, set the fence of the course three feet back on the straight side and curves. In this way, an exact mile (as near as may be) is preserved for the actual foot-track of all the horses. The first distance post is placed eighty yards from the judge's stand; the second at one hundred yards; and the start is sixty yards before entering the turn. The track should be graded round the turns, like the track of a railroad or circus, the outer portion highest, so that a horse can extend himself at full speed as well around the turns as on the straight sides.

FOR A HALF MILE TRACK.

A good half-mile track may be laid out as follows: Lay off two straight sides, 600 feet each (parallel) and 452 feet, 6 inches apart, connected at each end with a perfect semi-circle (radius 226 feet, 3 inches); place your fence exactly upon the line so formed (which is the inside of your track), and your track will measure exactly half a mile three feet from the fence, the outside fence to be placed according to the width of the track desired. If not convenient to obtain an engineer to run the curves, it can be done as follows: Place a centre stake midway between the parallel straight sides at each end, take a wire with a loop at the end loose enough to turn upon the stake, measure upon this wire 226 feet, 3 inches (the radius of the curves), which, from the centre stakes, will exactly reach the end of the straight lines; then describe your semi-circle, beginning at the end of one straight side and putting down a stake every twelve feet, if that is the length of the fence panels desired.

[From Wallace's Monthly.]

A horse	trotting in	2.00	covers	45	feet and	11	inches a second.
do	do	2.04	do	42	do	9	do
do	do	2.07	do	41	do	6	do
do	do	2.10¾	do	40	do	4	do
do	do	2.11¼	do	40	do	2	do
do	do	2.13¼	do	39	do	7	do
do	do	2.14	do	39	do	4	do
do	do	2.14¾	do	39	do	2	do
do	do	2.15	do	39	do	1	do
do	do	2.15¼	do	39	do	0	do
do	do	2.16	do	38	do	9	do
do	do	2.17	do	38	do	5	do
do	do	2.18	do	38	do	3	do
do	do	2.19	do	38	do	1	do
do	do	2.20	do	37	do	8	do
do	do	2.21	do	37	do	4	do
do	do	2.22	do	37	do	2	do
do	do	2.23	do	36	do	11	do
do	do	2.24	do	36	do	7	do
do	do	2.25	do	36	do	4	do
do	do	2.27	do	35	do	10	do
do	do	2.30	do	35	do	2	do
do	do	2.35	do	34	do	0	do
do	do	2.40	do	33	do	0	do
do	do	2.45	do	31	do	11	do
do	do	2.50	do	31	do	0	do
do	do	3.00	do	29	do	3	do

A 2.00 gait would distance a horse in 6.8 seconds; a 2.07 gait in 7 1-5 sec.; a 2.10¾ gait in 7½ sec.; a 2.21 gait in 8 sec.; a 2.30 gait in 8½ sec.; a 2.40 gait in 9 sec.; a 3.00 gait in 10.3 sec.

A horse trotting in 2.00 would beat a horse of 2.04, 116 yards, 2 feet; a horse trotting in 2.00 would beat a horse of 2.07, 176 yards, 2 feet; a horse trotting in 2.00 would beat Maud S., 223 yards, 1 foot.

Maud S. would beat St. Julien 7 yards, 9 inches; Rarus 32 yards, 2 feet; Goldsmith Maid, 43 yards, 1 foot; Smuggler, 58 yards; Dexter, 83 yards; 2.19, 98 yards; 2.25, 174 yards; 2.40, 319 yards; 3.00, 483 yards, or over ¼ of a mile.

St. Julien would beat Rarus, 25 yards, 1 foot; Goldsmith Maid, 47 yards; Smuggler, 51 yards; Dexter, 76 yards; 2.20, 85 yards.

Rarus would beat Goldsmith Maid 11 yds only; Smuggler, 25.5 yds.

2.20 would beat 2.25, 40 yards; 2.20 would beat 2.30, 116 yards; 2.30 would beat 2.40, 108 yards; 2.40 would beat 2.50, 106 yards; 2.50 would beat 3.00, 99 yards.

HOMEOPATHIC DEPARTMENT.

CHAPTER I.

USE OF REMEDIES AND ANATOMY OF HORSE.

CONTENTS OF CHAPTER.

HOMEOPATHIC TREATMENT.—Its principles, operations and distinguishing points—Size of dose not the main principle—Acts on diseased parts only—Cheaper and leaves no bad results.

REMEDIES.—Internal and external remedies and their strength—Administering and size of dose for all classes of domestic animals—How to choose the remedy and how often to repeat—How to feel the pulse and determine disease.

ANATOMY OF THE HORSE.—External parts and names—Location of disease externally—Location shown by skeleton—Names of the bones of the skeleton.

HOMEOPATHIC TREATMENT.

WHAT ITS PRINCIPLES ARE.

Homeopathy is a system of curing all curable diseases, whether in man or the inferior animals, by the agency of small doses of those medicines which, when exhibited in large repeated doses, are capable of producing in the healthy body symptoms similar to those produced by the disease in the sick body. Or the principle may be thus more briefly expressed,—*Similia similibus curantur;* that is, like is cured by like.

HOW IT OPERATES.

A little reflection will show the philosophy of this principle. The symptoms which arise in disease are not the disease itself; but are to

be regarded, probably, as the efforts of nature, which always exerts itself to exterminate the disease, and to restore the balance of the system. Every disease develops symptoms peculiar to itself; and the first inquiry of the truly scientific practitioner is, "In what direction is nature working to remove the disease and restore health?" Having observed the character of nature's efforts, he then seeks an agent that will call into action the same class of functions which nature is already employing for her own deliverance; and the curative power of this agent depends upon the power it possesses of inducing similar symptoms to those developed by nature when suffering from disease. For instance, a person having exposed himself, takes cold, and fever results. The fever cannot be regarded as the cold, seeing that it came after it, but is a symptom put on by nature in her efforts to remove the condition induced by the cold. Hence common sense dictates, that, if we would aid nature in her difficulty, we must act in perfect harmony with her; and not oppose or cripple her appliances. To borrow a familiar illustration, we must lift just where nature is lifting. She must furnish the indications, and we must second her efforts, by working in subserviency to her. The great secret of the healing art is, to obtain familiarity with the symptomatic phenomena of nature in any disease, and then to become acquainted with the curative properties of the various remedial agents, so as to be able to administer them in harmony with this true guiding principle. In the instance just referred to, the case of the person suffering from fever, aconitum would be an appropriate medicine, because aconitum given to a person in health, in repeated doses, would produce feverish symptoms; consequently it acts upon the same class of vital functions that nature has already employed to rid herself of the disease.

DISTINGUISHING POINTS IN HOMEOPATHY.

It only gives one remedy at a time. The confusion resulting from mixing different substances in one prescription is avoided; and the pure action of each separate drug is ascertained. Every remedy has an action peculiar to itself; and it cannot but happen, when several drugs are introduced into the system at the same time, that they

interfere with each other. If, under such circumstances, good is effected, it is quite impossible to determine which one, or how many out of the number, have contributed to the result. Or, if no good follow, and it be necessary to alter the prescription, then it must be also equally difficult to know what change to make, what portions to omit, what new ones to add. In Homeopathy we only give one medicine at a time; its action upon the system is then simple and unconflicting; nor are we any longer in doubt as to what is doing good.

SIZE OF THE DOSE GIVEN.

Homeopathy does not, however, mean a small dose, as it is often supposed to do. The grand principle—that which forms the basis of the science—is like curing like, irrespective of the quantity of the dose. The law, therefore, as a simple proposition, takes no cognizance of the dose; that was an after discovery—merely a consequence deduced from demonstrations on the principle itself. It is a matter of perfect indifference to Homeopathic practitioners whether they administer doses of one or fifty drops each. If doses of fifty drops were more efficient in curing disease than those of one or two drops, Homeopaths would assuredly administer the former rather than the latter. We will suggest two reasons why small doses, administered in strict harmony with the Homeopathic law, are efficient:—First, because they are exactly suited to the exalted susceptibility of the diseased part, and act upon the same class of functions that nature has already called to her aid; and, secondly, because they act directly on the part which requires to be influenced, and not on other parts. Their force is not, therefore, expended on healthy parts.

ACTS ONLY ON DISEASED PARTS.

In diseases of the brain, for example, the bowels are not operated on by purgatives; or the liver, mouth, and bones, by mercury; or the skin by blisters; but such substances are administered as have been proved to operate directly on the brain itself. So in diseases of the chest; the bowels, liver, and skin are undisturbed, and that part only acted upon in which disease exists. Under such treatment, disease

cannot be produced in healthy parts, and the disappearance of the disease is a certain sign that it is absolutely cured.

IT IS A CHEAPER METHOD.

This results from two causes—the duration of disease is shortened, and the medicine is obtained at a smaller cost. Animals treated Homeopathically recover much sooner. In severe diseases, such as inflammation of the lungs or bowels, the patient is cured in about half the time; for the treatment having been directed against the disease, and not against the constitution, as soon as the malady is cured he is able at once to resume his accustomed duties. In consequence of the small doses of medicine which it is found most advantageous to administer in Homeopathic treatment, a great saving is effected in the cost of drugs. Besides, it enables the owner of domestic animals, except in rare cases, to treat them himself, without being obliged to send, perhaps to a remote place, for a veterinary surgeon.

ANIMALS TREATED ARE NOT REDUCED IN VALUE.

Bleeding, blistering, purging, and other painful and debilitating processes are discarded; thus the period of convalescence is not only shortened, or even superseded, but the patient, having recovered of the disease, immediately regains his strength, because it has not been drained out of him.

How different is this to the old plan of treatment! A bucketful of blood drained from a horse's veins; he would have been racked by setons or rowels, and his bowels severely purged by aloes. And though such means may render the horse powerless, the disease often remains unsubdued. If he finally recovers or is sent to grass for some months to regain his flesh, it not unfrequently happens that the animal is found unequal to severe or sustained exertion, in consequence of thick or broken wind, the result, not of the disease, but of the destructive treatment to which the afflicted animal has been subjected.

MEDICINES, AND HOW TO USE THEM.

MEDICINES FOR INTERNAL USE.

Below we give a list of medicines, together with the English name of each and the strength or dilution. Opposite each name is a corresponding number, and when a remedy is prescribed in treating a disease, the number is also given to prevent mistakes:

	NAMES OF THE MEDICINES.	DILUTION.	ENGLISH NAMES.
1	Aconitum Napellus	1	Monkshood.
2	Ammonium Causticum	1	Caustic Ammonia.
3	Arnica Montana	1	Leopard's Bane.
4	Arsenicum Album	3x	White Arsenic.
5	Belladonna	1	Deadly Nightshade.
6	Bryonia Alba	1	White Bryony.
7	Cantharis	3x	Spanish Fly.
8	Chamomilla	1	Wild Camomile.
9	China	1	Peruvian Bark.
10	Cina	1	Worm Seed.
11	Colocynthis	1	Bitter Cucumber.
12	Dulcamara	1	Woody Nightshade.
13	Helleborus Niger	1	Black Hellebore.
14	Hepar Sulphur	3x	Liver of Sulphur.
15	Ipecacuanha	1	Ipecacuanha Root.
16	Mercurius Vivus	3x	Quicksilver.
17	Nux Vomica	1	Vomit Nut.
18	Phosphorus	4x	Phosphorus.
19	Pulsatilla	1	Pasque Flower
20	Rhus Toxicodendron	1	Poison Oak.
21	Secale	1	Ergot of Rye.
22	Silicea	3x	Silex.
23	Sulphur	3x	Flowers of Sulphur.
24	Veratrum Album	1	White Hellebore.

To accommodate the farmer and breeder who is at a distance from a reliable pharmacy, we have made a veterinary chest containing the above remedies, labeled, and also numbered to prevent mistakes, convenient for ordinary use. Any farmer can understand how to to use the remedies by the directions. The price of this veterinary medicine chest is given in the last pages of this book.

EXTERNAL REMEDIES.

Below we give the remedies for external use, and plain directions so that any person can compound them at home. All they need to get is the strong tincture, and reduce by the method directed:

ARNICA MONTANA.

In bruises, contusions, and mechanical injuries from blows or falls, Arnica will be found an invaluable remedy. The stiffness, swelling, and soreness resulting from bruises, may be also entirely prevented by the prompt use of this remedy. It is almost an invaluable application in the case of corns, and after surgical operations. Its use and mode of application in fatigue and excessive exertion, and in numerous other cases, will be found described under their respective headings, in the body of this work.

To make the lotion, mix one-table-spoonful of the strong tincture with half-a-pint of pure water. The bruised parts may be bathed with it, or linen cloths, saturated with the lotion, may be applied, and covered with dry cloths, to prevent its evaporation.

All owners of domestic animals should provide themselves with this remedy, as a most efficacious agent in bruises, concussions, collar galls, or wherever external inflammation has been produced by blow or friction. Its great economy is, also, a recommendation, especially where a large number of animals are kept, as it only requires two spoonfuls of the tincture to a pint of water, for use as a lotion.

CALENDULA OFFICINALIS.

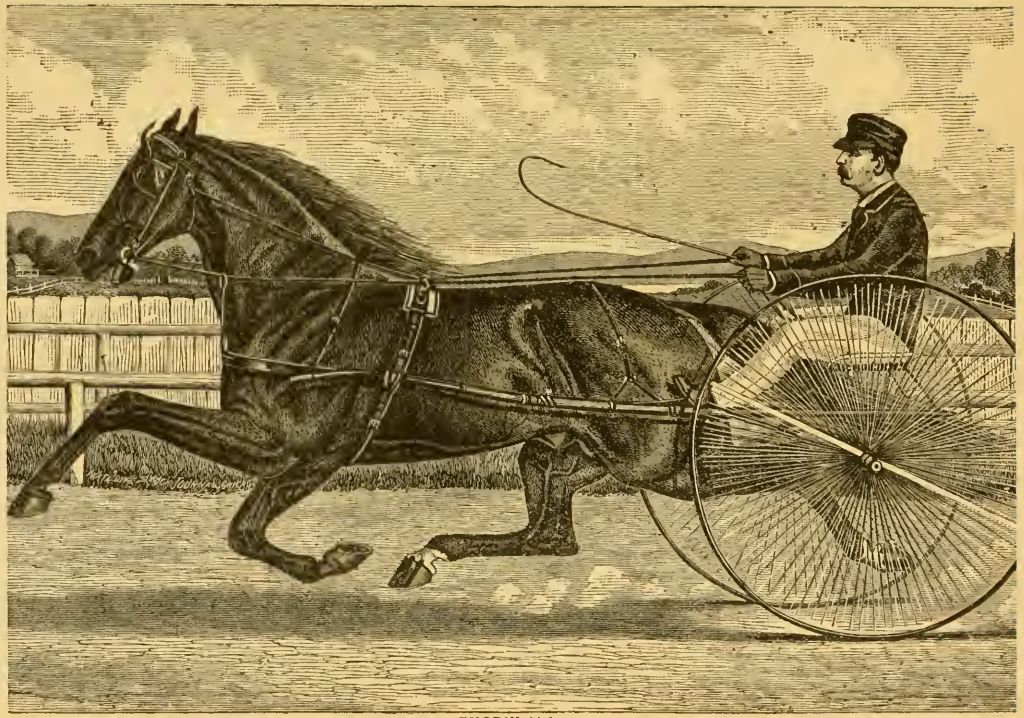
This remedy should be used in preference to Arnica, in cuts, wounds, and stabs in which the flesh is much torn, and which will not heal without the formation of matter. It controls bleeding, and relieves the severest pains attending various accidents.

The lotion is made by adding two tablespoonfuls of the strong tincture to a pint of pure water. It may be applied as directed for Arnica.

RHUS TOXICODENDRON.

This remedy is of great value in sprains, wrenches, and injuries to ligaments, tendons, joints, and the membranes investing the joints, and in rheumatism.

The lotion is made by adding two spoonfuls of the strong tincture to a pint of pure water. It is chiefly applied by being well rubbed into the affected parts, twice or thrice daily.



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ADMINISTRATION OF THE MEDICINES.

The required quantity of the tinctures should be mixed with a few spoonfuls of pure cold water, and given by means of small horns. Where two medicines are required to be given in turns, two horns should be used. After a horn has been used for one medicine it is particularly necessary that it should be well washed out before it is used for another. The triturations may be placed dry on the tongue of the animal, or mixed with a morsel of a favourite article of food.

MEDICINE TO BE GIVEN WHEN FASTING.

In all cases, when practicable, the medicines should be given to animals when they have been for some time without food, say fifteen to thirty minutes before they are fed.

THE DOSE FOR DIFFERENT ANIMALS.

As a general rule, for animals of an average size, ten drops of the tincture may be given to horses or cattle, or two grains of the trituration; and to sheep or swine, five drops or one grain of the trituration. As these animals vary in size, the above quantities may be regulated accordingly.

REPETITION OF DOSES.

This is a matter which must depend entirely upon the severity of the disease. In very violent cases, the dose may be given every ten, fifteen, or thirty minutes; in cases less severe, every two, three, or four hours; in chronic cases, once or twice daily. More particular directions as to the repetition of doses, will be found in the body of this work.

HOW TO CHOOSE THE RIGHT REMEDY.

This is a subject of great importance. The compiler of this work strongly recommends every one who has an interest in domestic animals, to read this book carefully through, from the first page to the last, especially to study the symptoms of the different diseases, so that when an animal is suffering, he may be able to detect the nature and seat of the complaint, and thus be able to adopt such treatment as may reasonably be expected to prove successful. It may here be re-

marked that, in the treatment of each malady in subsequent parts of this book, all the remedies suitable are not prescribed, but only those most generally useful, and by which the greatest number of cures have been effected.

Before a state of disease can be correctly estimated, it is necessary to have an acquaintance with the general appearances and habits of the animal in a state of health; such as the appearance of the eye, the mouth, the skin, the dung, and the urine; the breathing, the pulse, the general temperature of the body; the ease with which the animal stands or walks, and other similar matters, familiarity with which will at once enable the owner to mark any deviation from the symptoms indicative of ordinary good health. Reference must also be had to such peculiarities as are presented by the animal in disease: such as its breathing through the nose, the expression of the features and eyes, the position and movements of the animal, its looks towards particular parts, the beating of its sides with it tail, the excrements, etc. The animal may also be examined by pressure, in order to learn where it feels pain; for even diseases of the internal organs may be discovered by this process.

The temperature of the skin should likewise be examined. If chills and burning heat frequently succeed each other, disease of a violent nature may be suspected. In thick-skinned and hairy animals, it is often difficult to determine the state of the circulation by the pulse; in such cases, examining the temperature of the ears facilitates the inquiry.

After having carefully noted these signs, and arrived at a satisfactory conclusion respecting the nature and seat of the disease, the next thing is to select a remedy for the removal of the malady, according to the instructions given in subsequent portions of this manual.

HOW TO FEEL THE PULSE.

If the horse, hold its head quietly with the left hand; and with the first and second fingers of the right hand, feel for a notch in the jaw bone, about three inches from the angle of the bone; an artery, or cord-like structure, may here be detected; this artery swells and

throbs as it is filled with, and emptied of, blood. Having thus found the pulse, observe whether it beats with regularity; whether it is strong and bounding, almost forcing the fingers from the jaw; or hard, or small and wiry, like the motion of a string; or intermittent, beating for a few times, and then appearing to stop for one beat; or the pulsations flowing into one another, small, and almost imperceptible. An acquaintance with the healthy pulse will be necessary to understand what its different conditions may indicate in disease. In health, the pluse makes from 36 to 40 beats per minute. An excess of ten to fifteen beats per minute above the general standard of the pulse of the animal, may be taken to indicate constitutional disturbance. Still, even in health a variety of causes may operate to change the character of the pulse; such as severe exertion, fright, stimulating food or drink, and other causes. In seeking to learn the health of an animal from the pulse, reference must be had to various circumstances which materially influence the circulation.

DIET IN DISEASE.

In severe diseases, no food whatever should be given until amendment has taken place, and even then, only in a very cautious manner; if the stomach becomes crammed before the digestive organs have regained their healthy functions, the disease from which an animal may be recovering is very likely to return, and may even then prove fatal. Under such circumstances, the food should be selected with special reference to its nutritious and digestible properties. Bran, malt, oats, hay, carrots, and green grass or clover, are suitable for sick or convalescent animals.

Bran may be given, either dry or wetted, according to the taste of the animal. If in the form of mashes, those enormous scalding-hot mashes should be avoided, which often, by their bulk and temperature, derange a stomach weakened by disease.

Oats may be mixed with the bran, and given either raw or crushed, or whole and boiled.

Hay is an article of food which requires to be given with great caution to diseased animals, especially if the digestive organs have

not recovered their full tone. In all cases it ought to be selected perfectly sweet, and free from dust, and be sparingly given.

Carrots may be given raw, cut into small pieces, care being taken to wash them very clean before using them. They are a very nutritious and excellent vegetable, and will often be eaten when other kinds of food would be injurious or rejected.

Green food, if given in moderate quantities, may aggravate the disease, and even induce colic. This may generally be prevented by mixing a little hay with the green food, and permitting only small portions to be eaten at a time.

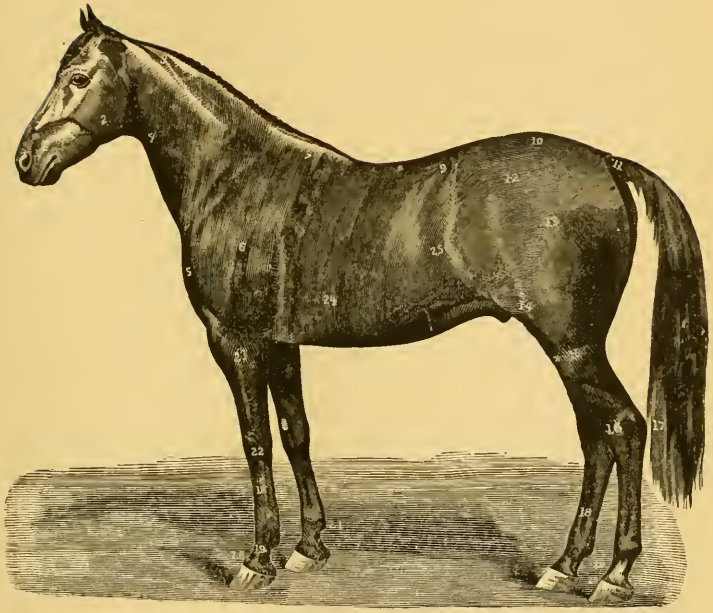
If an animal allows food to remain by it for several hours without eating it, such food had better be altogether removed, and a little fresh put in its place.

In addition to these articles of food, the fluids suitable for the diseased animal to drink, according to circumstances, are: barley water, oatmeal and linseed gruel, milk, milk and water, and cold water. Of the latter it will generally be proper to have a small quantity within reach of the animal. This should be renewed several times daily.

THE HABITATION OF THE SICK ANIMAL.

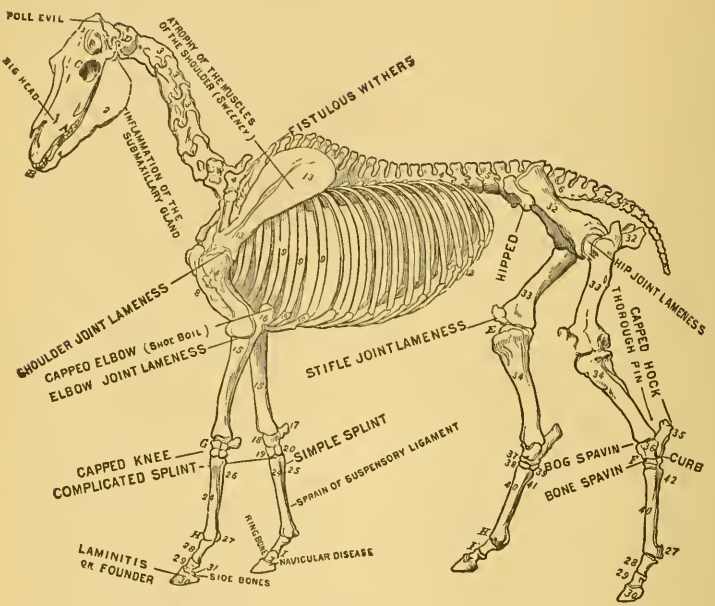
When an animal is found to be unwell, let it at once be placed in a comfortable, moderately well-lighted, clean and well-ventilated stable or shed, and receive from its attendant gentle treatment, and be spoken to in a kind tone of voice; all unnecessary noise, and anything that would be likely to irritate the animal, being avoided. It will be desirable, for two reasons, to separate the affected animal from all others: (1) If the disease be of an infectious nature, it will be prevented from spreading to others. (2) Early recovery is more likely to occur, as under these circumstances the animal remains undisturbed by the presence of others.

ANATOMICAL EXPLANATIONS.



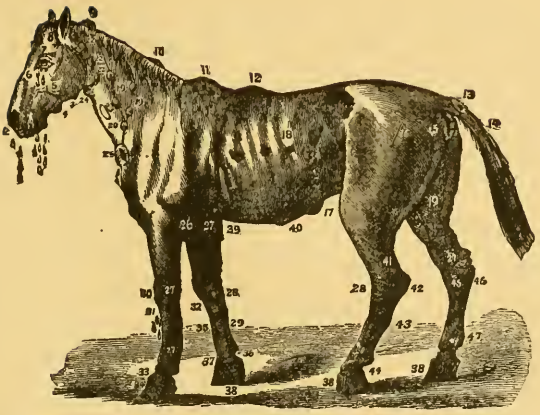
EXTERNAL POINTS OF A HORSE.

1. Forehead.
2. Lower Jaw.
3. Crest.
4. Neck, Throat.
5. Breast.
6. Shoulder.
7. Withers.
8. Back.
9. Loins.
10. Croup, Rump.
11. Dock.
12. Hip.
13. Quarter.
14. Stifle.
15. Thigh.
16. Hock.
17. Point of Hock.
18. Cannon, or Shank.
19. Large Pastern.
20. Small Pastern.
21. Fetlock.
22. Knee.
23. Arm.
24. Barrel, Ribs.
25. Flank.
7. Measure, hands high.
24. Girth.



DESCRIPTIVE ANATOMY OF THE HORSE.

1. Cranium, or head.
2. Lower jaw.
3, 4, 5. Backbone, spine.
6, 7. Sacrum and bones of the tail.
8. Sternum, or breast bone.
9, 10. Ribs and cartilages.
11, 12. False ribs and cartilages.
13. Scapula, or shoulder blade.
14. Humerus.
15. Radius.
16. Elbow.
17, 27. Sessamoid bones.
18, 19, 20. Small bones of knee joint.
24, 40. Shank, or cannon bones.
25, 41. Inner small splint bones.
26, 42. Outer small splint bones.
28. Large pastern bones.
29. Small pastern bones.
30. Pedal, coffin, or bone of foot.
31. Coffin joint.
32. Pelvis.
33. Femur.
34. Tibia, thigh bone.
35. Point of hock.
36. Large bone of hock joint.
37, 38, 39. Small bones of hock joint.
A. Molar teeth.
B. Incissor teeth.
E. Stifle joint.
F. Hock joint.
G. Knee joint.
H. Fetlock joint.
I. Pastern joint.



A VERY SICK HORSE.

1, 2, 3. Glanders.
4. Carries of jaw.
5. Fistula of parotid duct.
6. Diseases of the eye.
7, 8. Scars of previous brain disease.
9. Poll evil.
10. Prurigo mange.
11. Fistulous withers.
12. Saddle galls, callous.
13. Fistulous tail.
14. Rat tail.
15. Prolapsus of anus.
16. Hip joint lameness.
17. Stifled, luxation of patella.
18. Broken ribs.
19, 20. Farcy Buds.
21, 22. Inflamed parotid gland.
23. Inflamed juglar vein.
24. Sore throat.
25. Collar gall, tumor.
26. Copped elbow, tumor.
27. Windgalls.
28. Mallenders, Sallenders.
29. Simple splint.
30. Capped knee.
31. Broken knee, open joint.
32. Strain of back tendons.
33. Ringbone.
34. Founder, laminitis.
35. Grogginess, knee sprung.
36. Quittor.
37. Wound of coronet, tread.
38. Toe and quarter crack.
39. Ulceration elbow joint.
40. Rupture.
41. Thoroughpin.
42. Capped frock.
43. Rupture of back tendons.
44. Grease scratches.
45. Bone spavin.
46. Curb.
47. Swelled leg, lymphangitis.

CHAPTER II.

THE EYES, CHEST, ABDOMEN AND URINARY ORGANS.

CONTENTS OF CHAPTER.

DISEASES OF THE EYES, THROAT AND CHEST.—Paralysis of Optic Nerve—Amaurosis—Inflammation of the Eyes—Ophthalmia—Sore throat—Inflammation of Lungs—Pneumonia—Bronchitis—Common cold—Catarrh—Cough—Over-driving—Congestion.

DISEASES OF THE ABDOMEN.—Spasmodic Colic—Wind, or Flatulent Colic—Bloating—Hooven—Inflammation of Bowels—Enteritis—Diarrhœa—Dysentery—Constipation—Sleepy Staggers—Mad Staggers—Jaundice—Yellows—Bots.

DISEASES OF THE URINARY AND GENERATIVE ORGANS.—Bloody Urine—Red Water—Inflammation of Bladder—Retention of Urine—Abortion—Slinking—Venereal disease—Castration.

In very serious case consult the other Departments of this work for more detailed explanations and symptoms.

DISEASES OF THE EYES AND THROAT.

PARALYSIS OF OPTIC NERVE—AMAUROSIS.

If the nerve is destroyed, no cure is possible. In more favorable cases, when the animal sees a little, and there is some dilation of the pupil, one or more of the following medicines may be useful: *Belladonna*, *Pulsatilla*, *Sulphur*. Commence with the first, and after eight or ten days, if no benefit results, proceed with the next, and so on, till improvement is manifest. If the complaint has been caused by injury, *Arnica* will be the best medicine. The selected remedy may be administered twice or thrice daily.

OPHTHALMIA INFLAMMATION OF THE EYE.

Arnica (3).—This should be given when the disease has been caused by a blow. A dose may be administered every three or four hours.

Aconitum (1).—If *Arnica* fails to afford relief, or if cold be the cause of the affection, *Aconitum* should be given.

Belladonna (5).—When the inflammation has been diminished by the former medicines, and in cases where the tears are very copious and scalding, the eyelids swollen and shut, the eyes very sensitive to the light, membrane of the eye injected and red, this remedy is usually indicated.

Euphrasia.—Profuse watery discharge both from the eyes and nostrils, and much intolerance of light.

Mercurius Cor.—Discharge of yellowish mucus, which causes the eyelids to adhere; swelling of the lids; cornea cloudy or ulcerated.

Arsenicum (4.)—In cases of long standing, and when the tears are hot and corrosive.

Sulphur.—Is very valuable in some old standing cases, and to prevent a relapse.

The eye should be carefully and tenderly examined for seeds, hay, dirt, or any other intruded substance. If a portion of the cornea or conjunctiva have been removed by a blow, relief will be given by applying a drop of glycerine or salad oil to the part; but this should not supersede the application of *Arnica* lotion. In all cases the eye should be gently bathed with tepid water three or four times a day.

SORE THROAT.

Aconitum (1) is the best medicine to begin with, especially when the fever is considerable, the mouth dry, and there is much thirst. A dose every three hours.

Belladonna (5.)—Great difficulty of swallowing, especially fluids, which return through the nose; the glands of the neck are swelled and tender, slight pressure upon the throat causes a choking sensation, and the breathing is difficult. A dose four times daily.

Mercurius must be had recourse to when, in spite of the last medicine, the symptoms are not mitigated, or only partially so. A dose four times daily.

Sulphur, in obstinate sore throats. A dose two or three times daily, according to the symptoms.

Bran-mashes and gruel; and as a drink, barley-water, or milk and water; as improvement takes place, boiled oats, turnips, or carrots; and, if in season, green food.

DISEASES OF THE RESPIRATORY ORGANS.

INFLAMMATION OF THE LUNGS—PNEUMONIA.

For extended description of the symptoms of this disease, consult the other parts of this work.

Aconitum (1).—The treatment of nearly every case should be commenced by the administration of this remedy, every one, two, or three hours, according to the urgency of the general symptoms. It is especially indicated when the breathing is short, painful, and anxious; the pulse quick and hard, and the mouth dry and hot, with other feverish symptoms.

Bryonia (6).—This remedy is often required after *Aconitum*, especially if the latter has only afforded partial relief; in which case it should be administered in alternation every hour; that is, *Aconitum* one hour, *Bryonia* the next hour, or more or less frequently, according to the symptoms. *Bryonia* is especially required if the cough is frequent and occasions severe pain in the chest, which may be inferred from the efforts of the animal to suppress the cough, and from its avoiding movements, lest the pain in the chest should be increased.

Phosphorus (18), when the respiratory murmur is suppressed or very obscure, the breathing much obstructed, and the cough short and frequent, and attended often with a discharge of slimy or bloody phlegm. This is an important remedy in the complaint, and may be administered every first, second, or third hour, according to circumstances.

Arsenicum (4) is indicated by extreme debility; typhoid symptoms; wheezing, short, and difficult breathing; offensive discharge from the nostrils; severe purging, and when the disease is epidemic. It may be alternated with *Bryonia* or *Phosphorus*, according to the symptoms.

Sulphur.—This medicine is required when improvement has set in, especially when the disease is complicated with bronchitis, and attended with a muco-purulent discharge from the nose. It aids recovery and protects from relapses.

As this complaint is generally quite manageable if the treatment is commenced early, farmers are strongly advised to notice its first symptoms, and at once proceed with the administration of the appropriate remedies. Food must be very sparingly given, and only gradually increased as the beast recovers. It should consist of mashes, oatmeal gruel, linseed tea, and, after a few days, a small quantity of good hay. A return of the disease, which generally ends fatally, is likely to result from overloading the animal's stomach before its perfect recovery. The animal must be separated from others unaffected.

BRONCHITIS.

Bronchitis may terminate in chronic bronchitis; thick wind; chronic cough; swelling of the limbs, and dropsical complaints. The best medicines for preventing these consequences are *Arsenicum* and *Sulphur;* the former may be given in ten drop doses, twice or thrice daily for one or two weeks; afterwards, the latter in ten drop doses, once or twice daily, for a week or ten days. The animal must have exercise, and if the weather is fine and warm, a run at grass for a few hours every day will be of great service.

Aconitum (1).—When symptoms of inflammation or fever predominate this medicine should be given. It is also indicated by hot, dry mouth and skin; quick, strong, full pulse; short, dry, frequent cough; difficult breathing; great thirst, and red, dry nasal membrane. A dose every three or four hours. It is usually best to alternate *Aconitum* with *Bryonia*.

Bryonia (6.)—The large bronchi are chiefly affected; the whole chest and lungs appear much involved, the breathing is quick, short, and

difficult, and the animal unwilling to move. A dose every four hours. If improvement takes place, continue the medicine less frequently till the animal is well. In some cases both this and the preceding remedy are required in alternation; that is one dose of *Aconitum* first; then one of *Bryonia*; in two, three, or four hours after; then another dose of *Aconitum* in two, three, or four hours, and so on. As the animal improves, give the medicines much less frequently. *Bryonia* is suitable for those cases of chronic bronchitis when a horse coughs only when trotted, but not when at rest.

Phosphorus (18).—This remedy is to be preferred when the small bronchi are chiefly affected; the cough being painful and suppressed, or loud, dry, and frequent, but with scanty discharge from the nostrils. Also if, after using the above remedies little or no benefit ensues, and the breathing becomes more quickened, the mucus rale louder, and the cough more suffocating, this medicine may be alternated with *Bryonia* as directed for *Aconitum* and *Bryonia*.

Belladonna (5).—Sore throat; violent fits of coughing; great difficulty of swallowing, and pressure upon the throat, almost producing suffocation. A dose every three or four hours.

Arsenicum (4).—Cold extremities, great loss of strength, wasting of flesh, bad appetite, tendency to diarrhœa. A dose every four hours. If the animal improves with its use, continue it till recovery is complete.

During the severer forms of the disease, bran mashes, gruel, barley-water, and aired water; as improvement takes place, and the digestive organs become stronger, boiled barley, or oats, or a little malt, or speared corn, turnips, carrots, and, if in season, green food may be given.

COMMON COLD—CATARRH.

Catarrh is characterized by cough, nasal discharge, and sore throat; is attended with less debility and fever than influenza, with less enlargement of the glands than strangles.

Aconitum (1).—If the complaint is ushered in with shivering, followed by quick and full pulse, inflamed eyes and nose, thirst, and scanty

and high-colored urine. Generally this medicine will be most suitable to commence with (unless the fever be of a low, asthenic type), and if followed by rest, and protection from cold for a few days, will often complete the cure.

Dulcamara (12.)—Fever of a low type brought on by wet, attended by gastric symptoms, white or shining coating on tongue, and constipation. *Nux* is indicated by the same symptoms.

Belladonna (5.)—Pulse weak though quick, nasal discharge thin and scanty, throat sore.

Mercurius.—Thick, offensive mucus discharge from the nose, agglutination of the eyelids, enlargement of the glands of the neck, sore throat, difficulty of swallowing, slavering, diarrhœa. In some cases it is well to alternate it with *Belladonna.*

Arsenicum (4).—Cold, from drinking cold water while the animal was overheated; great weakness; thin, acrid, irritating discharge from the nostrils; difficult breathing; swelled legs; loss of appetite, and excessive purging; symptoms as for *Aconitum* all aggravated.

Bryonia (6).—Short breathing, attended with pain; violent fits of coughing, the animal appearing unwilling to move.

Sulphur.—When improvement takes place, continue the medicine that has brought it about, but at greater intervals; and afterwards, to prevent a return of the symptoms, give *Sulphur* twice daily for a few days.

Whatever remedy is selected, it should be given three or four times a day, till the symptoms are mitigated; afterwards, once or twice a day, and gradually relinquished entirely.

Fresh air without draughts; extra warmth; abundance of clean straw in the stable, dirty straw removed; friction of the horse's skin morning and night with the hand or a flannel; sponging nose and eyes with tepid water several times a day; bran mashes, gruel, plenty of water with the chill off. All animals are best indoors for a few days.

Whenever an animal has been exposed to any of the circumstances which occasion this complaint, especially if the early indications of cold be present, the prompt administration of *Camphor* will

often render further treatment unnecessary, by terminating the cold in the first stage. This remedy should be given about twenty or thirty minutes, till three or four doses have been given. *Camphor* is suited to the chilly stage of a cold, but not to the inflammatory.

COUGH.

Aconitum (1).—Coughs of an inflammatory character; short; dry; frequent. When the mucous membrane becomes moist, and the pulse small and feeble, *Aconitum* should be discontinued, or given in alternation with a more specific medicine.

Belladonna (5.)—Cough dry, short, barking; worse in the evening or at night, apparently caused by tickling or irritation in the throat; sore throat and painful swallowing; chronic cough.

Arsenicum (4.)—Dry cough in the evening or at night, after eating or drinking, or going up hill, or on contact with cold air; difficult breathing, thin discharge from the nostrils; loss of flesh and strength. Coughs which remain after influenza or catarrh, apparently dependent on loss of nervous power.

Nux Vomica.—Cough dry, hoarse, spasmodic; worse in the morning, after exercise or after eating; attended with disorder of the stomach, furred tongue, foul mouth, uncertain appetite, constipation.

Phosphorus (18).—Dry cough excited by cold air, drinking, irritation and tickling in the windpipe, accompanied with phlegm and difficult respiration.

Bryonia (6).—Cough which requires much effort, and cuts short the respiration; cough during east winds or frosty weather, or after eating and drinking; continued dry cough, especially early in the morning; accompanied by rattling in some part of the trachea, and produced by pressure on the part of the trachea where the rale is heard.

Sulphur.—Long-continued and obstinate cough. This medicine may often be advantageously given in alternation with some of the remedies before mentioned, especially when a remedy has been carefully selected, but does not effect the desired improvement.

A dose three or four times daily; when improvement takes place only once in every twelve or twenty-four hours.

No inferior food should be given; carrots, either raw or boiled, are very suitable; linseed tea, and other diluent drinks, will generally afford relief to animal affected with cough.

OVER-DRIVING—CONGESTION—FATIGUE—EXCESSIVE EXERTION.

After excessive and prolonged exercise, the greatest benefit will result from bandaging the legs with cloths saturated in *Arnica* lotion, and at the same time administering *Arnica* as prepared for internal use. These measures will generally prevent the swelling, stiffness, and other consequences resulting from severe exertion.

Aconitum, (1).—If there are feverish symptoms, it will sometimes be necessary to commence the internal treatment by giving a few doses of this remedy, every three hours, for several times. *Aconitum* will tend to allay the feverish excitement of the system.

Nux Vomica, (17).—If, after overworking, the animal is off its food, this medicine will often restore the appetite to its natural state. One or two doses may be sufficient.

Cantharis, (7).—If, after quick and continued driving, the animal passes bloody urine, a few doses of *Cantharis* will be an excellent remedy. A dose every three hours, till better.

Over-exertion, if long-continued, is likely to occasion disturbance of the general organization; and if, under such circumstance, the animal be exposed to cold or wet, disease of a fatal character will most likely ensue of living complications.

DISEASES OF THE DIGESTIVE ORGANS.

SPASMODIC COLIC.

Aconitum (1).—When caused by a chill or by drinking cold water when heated, and attended by extreme restlessness, fever, distention and rumbling in the abdomen, frequent and ineffectual efforts to uri-

nate and defecate. A dose as soon as the attack sets in, and repeated every fifteen minutes, for several times. The prompt use of this medicine will be sufficient to effect a cure in the great majority of cases of genuine colic.

Arsenicum (4).—If the animal is no better after four doses of *Aconitum*, and there are severe purging, extreme prostration, and other violent symptoms, give this medicine every twenty minutes; or in turns with *Aconitum* at the same intervals. These two medicines will cure most cases of colic.

Nux Vomica (17).—Colic, caused by errors in diet, with constipation, discharges of small balls of brownish dung, covered with mucus; attempts to stale followed by the discharge of only a few drops of urine, or none at all; the sufferings not being marked by extreme violence, as indicated under *Arsenicum*. A dose every twenty or thirty minutes until better.

Colocynthis (11) is also an excellent remedy when colic is caused by eating green food, and is attended with distention, expulsion of wind, and watery fæces, and very severe pain.

WIND, OR FLATULENT COLIC.

Ammonium Causticum (2).—This is one of the best of remedies for this disease, and will generally yield often the first or second dose. In most cases of colic, the cure is hastened by giving injections of tepid soap and water, and renewing them as often as the last injection is expelled again from the bowels. This is preferable to back raking. Cloths wrung out of warm water should be applied to the abdomen in severe cases.

Animals should be prevented from falling down too suddenly and rolling over, especially in the case of horses and cattle, lest the stomach, bowels, or bladder should be ruptured. The animal should be slowly led about.

BLOATING—HOOVEN.

Colocynthis (11).—This is especially indicated when the disease occurs in consequence of eating green food too freely. Administer ten

drops, in a few spoonfuls of water, every fifteen or twenty minutes, until the symptoms are mitigated; afterwards every two or three hours, as long as may be necessary.

Other remedies are—*Aconitum*, *Ammonium Causticum*, *Arsenicum and Nux Vomica*. For the symptoms indicating these remedies, see the article Colic.

Hand-rubbing the abdomen with considerable amount of pressure, and enemas of warm water will be of service.

When the attack is over, great caution is necessary as to food, which should be restricted to such articles as gruel and barley water, and only given in small quantities, until the digestive organs are fully restored to a healthy state. Hay, and dry food of any kind, had better be withheld for a day or two.

ENTERITIS—INFLAMMATION OF THE BOWELS.

Aconitum (1).—This is the first and chief remedy in the complaint. A dose every fifteen minutes for several times; afterwards, if improvement follow its use, every three or four hours, till the animal is well.

Arsenicum (4).—The sufferings are very intense, the pulse nearly gone, cold mouth, the animal appearing to be sinking under the disease. A dose every half-hour for several times; or administer this remedy alternately, every half hour, with *Aconitum*.

Nux Vomica (17).—Confined state of the bowels, or only relieved with much difficulty, and the urgings to urinate are attended with the discharge of only a few drops of water. A dose every thirty minutes, for several times; when relieved, less often.

Other remedies are: *Cantharis*, for great urinary difficulties; *Pulsatilla* for diarrhœa.

Hot water is a valuable adjunct in the treatment of this disease. It may be applied externally by steeping cloths in the water, and closely and compactly, but not too tightly, applying them to the body, and securing them by belts. Hot water may also be given either as a drench, or as an injection. The water must not be so hot as to scald the animal. The administration of *Aconitum*, as stated above, and hot water applied copiously to the body of the animal locally, and oc-

casionally in doses of from a half-pint to a pint internally, will constitute the principal feature of the treatment at the commencement of an attack.

If discovered in time, an inflammation of the digestive organs will generally yield to the prompt use of the above remedies. Linseed tea, or oatmeal gruel, will form the most suitable diet.

DIARRHŒA.

Simple diarrhœa is generally cured by removing the causes which produced it, by keeping the animal warm, and feeding it on sound, dry food. Protracted diarrhœa requires rest in a comfortable stable, well littered with dry straw, and one or more of the following remedies:-

Aconitum (1).—Diarrhœa in the primary stage, when it arises from taking cold; considerable fever; inflammation of the bowels. A dose every two or three hours, for several times.

Nux Vomica (17).—Discharges more feculent than serous, slimy and offensive, with rumbling noises in the bowels and passing of flatus; when there are symptoms of indigestion; and when the purging is alternated with constipation; *Nux Vomica* should be given every hour for four days, succeeded by *Mercurius*.

Camphor.—Painless diarrhœa of a serous character, with shivering or cold skin; fifteen or twenty drops should be given on sugar, as it will not mix with water, or in a little flour, and placed on the tongue, every ten minutes for three doses, and repeated after each motion.

Arsenicum (4).—In watery, slimy, greenish, or brownish diarrhœa, with or without griping pains; when the horse is prostrate, weak, thin, and without appetite, as also when it occurs in fevers of a typhoid character.

Mercurius.—When the dung is intermixed with mucus and voided without perceptible griping; sometimes best to alternate with *Arsenicum*.

China (9).—Most useful in chronic cases, or when caused by hot weather, and not of an inflammatory character; painless discharge,

loss of appetite, flesh and strength; intermittent diarrhœa; as a tonic when acute symptoms have passed away.

Bryonia (6).—If the disorder has been brought on by change of temperature, especially by that from heat to cold, by drinking cold water, or anything that has checked the perspiration and given cold; or if it be from drinking impure water, as in the stable yard, or on marshes. It is also indicated when the fæces are very watery and involuntarily passed, and contain indigestible food.

Pulsatilla (19) is useful for calves that suffer from the inferior quality of their mother's milk.

DYSENTERY—BLOODY FLUX.

It consists in the inflammation of the mucous membrane of the intestines, producing change in the character of the secreted mucus and increase in its quantity; whereas diarrhœa is a natural means of removing from the system what is prejudicial to it. Dysentery may, however, follow neglected diarrhœa.

Aconitum (1).—Useful at the commencement of acute cases, when ushered in or attended by febrile symptoms. Should dysenteric diarrhœa be present it should be given in alternation with *Acid Phosphorus*, a dose of either every hour alternately. But should the fæces be passed in small hard balls, and covered with mucus or blood, attended with griping, hot, dry skin, and thirst, *Aconitum* should be given in alternation with *Nux Vomica*.

Nux Vomica (17).—As genuine dysentery is nearly always attended by constipation, *Nux Vomica*, either in alternation with *Aconitum* in the early stage, or alone after the febrile symptoms have been removed, has proved most successful. Its indications are the frequent passing of one or two small feculent balls, accompanied by tenesmus, and fruitless efforts to void urine and flatulency. It is seldom advisable to continue it beyond the first day, when a dose should be given every two hours.

Mercurius Cor.—This is our sheet-anchor in the treatment of such cases as have not been relieved by the early administration of *Aconitum* and *Nux Vomica*. The symptoms requiring it are, frequent

discharge of mucus tinged with blood, or thin bloody and fœtid stools, which in the day are sometimes nearly black and mixed with tough strings of lymph or hardened pieces of fæces; frequently urging to stool, tenesmus, with redness and swollen appearance of the anus, and sometimes protrusion of the bowel, probably accompanied by slight griping pains and flatulency. A dose every third hour.

Colocynthis (11).—Nausea, severe colicky pains, slimy evacuations, or mucus tinged with blood, distention of the bowels, and pain on pressure, tenesmus, thirst, and variable temperature of the body, being at one time shivering and soon after very hot; sedimentous or red urine. It is applicable to almost every kind of dysentery, and may be used after *Mercurius* has been tried without affording relief. A dose every third hour.

Arsenicum (14).—Dysentery produced by any cause of a debilitating character, such as bleeding, purging, or previous disease. In acute idiopathic dysentery it is of no service. The discharges are loose, passed almost involuntarily, fœtid and bloody; greenish, or nearly black. Great rumbling in the bowels, and flatulence; pulse small and frequent; total loss of appetite, and marked prostration of strength; skin and extremities cold; frequent eructations; passing of flatus and straining; griping pains may also be occasionally noticed. A dose every two hours.

CONSTIPATION.

Nux Vomica (17) *and Sulphur*.—Hard, scanty dung, lined with mucus, and the abdomen puckered up. Administer these remedies for several days; a dose of *Nux Vomica* at night, and of *Sulphur* in the morning.

In less chronic cases of constipation ten drop doses of the trituration of *Nux Vomica* administered in a morsel of favorite food, night and morning, will often be found an excellent remedy.

Bryonia (6).—Alternate constipation and diarrhœa, especially from cold. A dose thrice daily.

Let the animal have regular and moderate exercise, and green food, soft or boiled food, mashes, but few oats, and no beans. When

the obstruction appears to take place in the large terminal bowel, which is full of hardened dung, an occasional injection of tepid water will be very useful, and it is also less dangerous than back-raking.

SLEEPY STAGGERS—MAD STAGGERS.

In case of the horse or cow, place the head high immediately after the attack; remove everything that prevents free respiration, and rub the animal well with wisps of straw, especially on the limbs and small of the back.

Aconitum (1).—If the circumstances do not preclude treatment, administer a dose every ten minutes for several times.

Belladonna (5).—If the animal survive the attack, give this remedy in turns with *Aconitum* at intervals of two or three hours. It is indicated by staring, wide, immovable eyes, twitching and jerking of the limbs, and should be persevered with for some time.

Opium.—Drowsiness, stupor, profound coma; irregular, stertorous breathing; contracted pupils.

Nux Vomica (17).—Inability to move the limbs, or spasmodic and convulsive jerks; constipation.

JAUNDICE—YELLOWS.

These vary according to the stages or severity of the disease; but there will generally be some or all of the following: Impaired appetite; thin, sad and unthrifty appearance; hurried breathing; tenderness of the right side on pressure; diminished secretion of milk, and, in ruminating animals, the cud is chewed imperfectly. The conjunctiva and the mucous membrane of the mouth and nose become yellow, and the tongue is lined with a tenacious mucus.

In cows, the milk is tinged yellow, and is somewhat bitter. The skin gradually turns yellow, the color being particularly visible where the skin is not covered with hair. The dung and urine are also colored yellow; the temperature of the skin is raised, and other symptoms indicative of fever are generally present.

The disease arises from a morbid condition of the liver, such as induration, inflammation, gall stones becoming fixed in the gall blad-

der, or in the canal between it and the bowels, so that the gall is impeded in its course, and other diseases of the liver.

Aconitum (1), when there is inflammatory fever, confined bowels, and high-colored urine. A dose every three hours till these symptoms are abated.

Mercurius is the chief remedy after *Aconitum*, especially if there is yellowness of the whites of the eyes and of the skin, the urine and milk also tinged yellow, and the animal is excessively purged. A dose every three or four hours.

Arsenicum (4), when, in addition to the above symptoms, there are loss of appetite, scanty urine, and marked prostration, two drops every three hours.

Bryonia (6), and *Mercurius* in alternation, every three hours, if confined bowels are a prominent symptom, and if there be any symptoms of inflammatory action.

Green and succulent feed; or, if not in season, cut carrots, turnips, potatoes, cabbage leaves, etc.

BOTS.

Whether these parasites do any harm during their sojourn in the horse's stomach is a matter of dispute among vetrinarians. The probability is that as long as they are only attached to the cardiac extremity, whose cuticular coat is insensible, they do no harm; but when a few stragglers find their way into the duodendum they may produce colicky pains or other symptoms of intestinal derangement, but this is doubtful.

No treatment seems available, nor in the majority of cases is any advisable, for the presence of the "bots" cannot be discovered until they commence coming away of their own accord, and then a few days will rid the horse of them without our interference. If colic or indigestion supervene, *Nux Vomica* (17), will prove remedial.

DISEASES OF THE URINARY ORGANS

BLOODY URINE.

Aconitum (1).—If there is much inflammation present, a dose every two or three hours, till this symptom is abated. This remedy may often precede either of the following, or be given in alternation with them for a few times.

Arnica (3).—If the complaint is owing to external violence, or excessive exertion. A dose every four or six hours.

Cantharis (7).—If the urine is very bloody, and is passed in small quantities, and with evident pain. A dose every two or three hours.

Terebinth.—For symptoms very similar to those indicating *Cantharis*. When the bleeding takes place from the kidney it is especially useful.

Much benefit may be expected from the application of large woolen cloths, after saturation in cold water, to the loins, and frequently renewed. Cold water injected may also be now and then resorted to. The diet should consist of boiled barley, cold; carrots or boiled turnips, cold; as a drink, barley water, cold. Further, the animal must have complete rest.

INFLAMMATION OF BLADDER.

Aconitum (1).—Feverish symptoms; frequent, ineffectual, and painful attempts to urinate; pain on pressure in the region of the bladder; discharge of scanty, turbid, bloody urine.

Cantharis (7).—Distention and pain in the region of the bladder; urination drop by drop; great pain in the act; matter and bloody mucus in the urine.

Nux Vomica (17.)—If *Cantharis* should not afford relief.

Arnica (3.)—If the disorder is caused by a blow on the loins.

RETENTION OF URINE.

It will generally be best first to administer a dose of *Camphor* every five or ten minutes for four times. If this fail to afford relief, give *Cantharis* (7) every thirty minutes, for several times. If but lit-

tle benefit result from this treatment, *Nux Vomica* (17) may be had recourse to, which will often effect the necessary change. It may be given every half hour till improvement follows, when it will be required less frequently.

If there is reason to suppose that the difficulty is caused by the presence of a stone in the opening of the bladder, through which the water passes, mechanical means must be employed with the view of removing it. In large animals, the expulsion of a stone is facilitated by passing the hand into the rectum, and gently pressing the bladder forward.

ABORTION—SLINKING.

Arnica (3).—If, during gestation, an animal is known to have received an injury, it will be advisable at once to administer this remedy and repeat it as often as the nature of the case seems to require; if promptly given it will often prevent miscarriage under such circumstances.

Rhus Tox (20).—If miscarriage is threatened in consequence of strains, or over-exertion, administer this remedy instead of, and in the same manner as *Arnica*.

Secale (21).—If the symptoms of abortion have actually set in, this remedy will facilitate labor. It is called for by violent straining after abortion, attended by abundant discharge of blood and feebleness.

Pulsatilla (19).—This will sometimes avert abortion by lessening uterine pains. It is also required if the afterbirth does not come away in twenty-four hours. A dose every two or three hours.

Aconitum (1).—If chills occur. A dose every hour till the symptoms be removed.

Opium should be given to a mare that has suffered from fright. *China* promotes recovery from the weakness attending abortion.

After miscarriage the animal should be kept quiet, and free from exposure to cold winds.

VENEREAL DISEASE.

This disease affects both male and female animals, and is known

by abscesses, ulcers, and discharge from the sexual organs. In the female the disease begins in from two to four or five days after sexual intercourse, the first symptom being a peculiar shaking and side movement of the tail, which is kept at other times rather close over the fundament; the bearing is at first swollen and sore, afterwards much more swollen, separated, and red in the inside; a mattery discharge, sometimes in considerable quantities, flows forth; the urine is made in small quantities, and frequently; whilst the act attending it is accompanied by much pain. In the male animal the sheath is red and swollen; a constant discharge of matter issues from it; great pain attends the act of urinating, and the water is voided in small quantities, and in a jerking manner.

It is a peculiar animal poison, which is readily communicated to both male and female animals by the sexual act. The disease may originate from want of cleanliness, or from the excessive use of the sexual organs.

Aconitum (1).—This remedy is useful to begin with, when the inflammation is severe and extensive, and when the act of urinating is attended with much pain and difficulty. A dose every three hours, repeated three or four times, will generally be sufficient.

Cantharis (7).—When the inflammatory symptoms are mitigated, but the difficulty of passing urine is very obstinate, especially if the discharge is greenish, and tinged with blood. A dose every three hours. In some instances this medicine may be administered in turns with the afore-mentioned, giving *Aconitum* one three hours, and *Cantharis* the next three hours, and so on.

Mercurius.—After a few doses of these remedies have been given, this remedy will then be most suitable; it is especially indicated when there is great soreness of the parts, and the discharge of matter is of a white, greenish, or yellow color, and thick. This remedy may be administered in two grain doses, thrice daily.

Sulphur.—When the more prominent symptoms have subsided, it will be desirable to have recourse to this remedy, to complete the cure. A dose one or twice daily for several days.

The affected parts should frequently be washed with cold water; and cold water should also be injected into the vagina and rectum. The sexual organs must not be exercised until the disease is cured.

CASTRATION.

This operation consists in removing the testicles and ovaries from animals, for the purpose of rendering them unfit for propagation, and thereby increasing their value for agricultural and domestic uses. Foals are best subjected to the operation just before they are taken from the dams, either in spring or autumn, in weather not very hot nor very cold. If weaning has taken place, the allowance of food and water should be somewhat reduced; training or highly-fed colts require several weeks' rest and gradual reduction of food. Female animals should never be castrated when the sexual instinct is excited; in male animals the operation should not take place until one or two weeks after the last performance of the sexual act. The operation is sometimes followed by ailments which require treatment. The principal of these ailments are: inflammatory symptoms, tetanus, spasms, ulcers, etc. The chief causes of mischief consequent on this operation are: cold and damp stables, cold bathing, and exposure to cold generally soon after castration, causing inflammation or tetanus. Tetanus is also apt to set in if the operation is performed too early after the sexual act. If sows are castrated when the sexual instinct is excited, they often die.

Arnica (3).—The parts should be bathed with *Arnica* lotion immediately after the operation, and a few doses of *Arnica* as prepared for internal use should be given; this will often prevent fever and undue swelling. Should inflammatory symptoms set in, *Aconitum* should be administered every one, two, or three hours, according to the urgency of the symptoms. If there be swelling of the abdomen *Arsenicum* will be of service.

CHAPTER III.

THE LIMBS, FEET AND MISCELLANEOUS AILMENTS.

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MISCELLANEOUS DISEASES.—Glanders—Farcy—Lock Jaw—Distemper—Strangles—Megrims—Epilepsy—Milk Fever—Mange—Dropsy—Worms—Wounds, etc.

DISEASES OF THE FEET AND LIMBS.

LAMINITIS—FOUNDER.

The most effectual remedies are *Aconitum* (1) in alternation with *Arsenicum* (4) every third hour, so long as febrile symptons remain, followed by *Arnica* (3). Should these fail, *Belladonna*, *Rhus* and *Bryonia* will have the desired effect if used before matter has been thrown out inside the hoof. The diet should at first consist of gruel, bran-mashes, carrots, etc.; beans should be prohibited; oats given with moderation. The stable should be kept cool.

CHRONIC LAMINITIS.

This form is so insidious, that we are not made aware of its presence until some organic change has taken place in the foot.

Except some perceptible inflammation be present, internal medicines are of no avail; but if detected before the laminæ lose their elasticity or the foot becomes altered in appearance, *Arnica* (3) is the best remedy, which should be given three times a day. Felt pads should be kept on the feet, and cloths, wet with *Arnica* lotion, applied to the coronets. The horse should be fed on mashes and green food.

If the owner will consent to lay the horse by for a few weeks, a favorable result may be anticipated from taking off the shoes and turning the animal into a large box, the floor of which must be covered over with tan, or sawdust. If the elasticity of the foot be restored, work on soft ground will do no harm, but walking half a mile on hard ground may bring back inflammation.

SYNOVITIS.

This is an acute inflammation of the synovial membranes of a joint.

The symptoms are lameness, quickly followed by swelling of joint, which is hot and painful. As the disease proceeds, coagulable lymph may be thrown out, and the joint become permanently enlarged, or adhesion may take place between the opposite surfaces of the membrane, and the animal be left with a stiff or anchylosed joint.

Aconitum (1).—This is the most effectual remedy, not only for reducing the inflammation, but also for preventing coagulable effusion or any subsequent disorganization of the joints. It should be used steadily as long as there are any febrile symptoms, or much local pain remains.

Bryonia (6.)—When the active symptoms are somewhat subdued, and there remain swelling with slight lameness. *Bryonia* is the most appropriate remedy.

Other remedies which will at times be found useful are *Arnica*, *Rhus*, *Colchicum*, *Mercurius*.

The joint affected should be bathed three times a day for half an hour at a time, with warm water; then, when dry, *Arnica* one part, and water twelve parts, well rubbed in.

RHEUMATISM.

Aconitum (1).—Will always be the best medicine to begin with in the acute form of rheumatism. A dose every three or four hours.

Bryonia (6).—Is generally best to follow *Aconitum;* or if the fever is only partially abated, to alternate with it every third hour. This remedy is especially required if the animal prefers the recumbent position, and the slightest motion appears to aggravate the pains.

Rhus Tox (20).—Will be useful when the stiffness and lameness are most observed after rest and when the animal first begins to move, but are relieved after a little exercise.

Arnica (3).—Will be the most suitable remedy if the affection follows severe exertion.

Sulphur.—Should the above remedies afford only partial relief, this remedy may be given for a few days; afterwards return to the medicine most indicated. *Sulphur* may also be given when the prominent symptoms have been removed by the above treatment, or when the complaint is apt to return in changeable weather. In acute rheumatism, the medicine should be given every three hours, and in chronic, every six hours; and in both cases be patiently and steadily persevered with.

The animal must be well cared for, have a warm and dry habitation, and a plentiful supply of clean, dry straw. Should there be much pain and swelling, warm fomentations and bandages will be serviceable. He should be kept perfectly quiet, and be allowed to move or rest as his pains may require.

BONE SPAVIN.

Rhus.—This medicine should be given three times a day; at the same time a lotion of it should be rubbed on the back. The animal should be turned into a loose box for about a month, and the inner heel of the hind shoe raised on a level with the outside. When osseous deposition has taken place, a blister composed of *Bin-Iodide of Mercury*, one drachm, lard, one ounce, should be applied. The hair should be shaved off, and then with a spatula or flat piece of wood

some of the mixture should be smeared thickly over the enlargement. The horse's head must be tied up for twelve hours, after which he may be turned into a loose box. The dressing may be repeated every other day until the hock becomes covered with scurf, which should be allowed to clear away before the application is resumed.

BOG SPAVIN.

In recent cases the hock should be fomented with warm water three times a day, and after each fomentation a tablespoonful of *Arnica* lotion, (*Arnica* one part to water twenty parts) should be rubbed in. In about a week afterwards, *Rhus* lotion should be applied in the same manner. At the same time ten grains of *Mercurius Sol.* should be placed dry on the tongue three times a day. In cases of long standthere is no treatment equal to pressure.

WINDGALLS.

Nothing tends more to remove bursal enlargements than pressure evenly applied; at the same time the cold and moisture will relieve the inflammation in the tendon or joint. Should this not succeed in removing the lameness and swelling, the bursa should be fomented morning and evening for half an hour with warm water, and, when dry, rubbed with about a tablespoonful of a lotion composed of *Rhus Tox*, one ounce, water, one pint.

DISLOCATION OF THE PATELLA, OR STIFLED.

This is the most frequent dislocation, and the only one which a non-professional man can hope to treat with success.

It may be caused by a horse falling across a bank, and then struggling to pull his hind legs after him, the ligaments of the patella become sprained, and allow it to slip over the external condyle of the femur. It may also be caused in the stable by the horse's slipping when endeavoring to get up.

When we move the animal we find the leg protruded backwards, with inability to draw it under the body; the fetlock joint is flexed; he trails the pastern along the ground, and is unable to strengthen it; in fact, the action is so peculiar that, once seen, it can never be forgotten.

The mode of reducing this dislocation is not difficult. With a side-line from the pastern, let the leg be drawn forward and upwards towards the belly by an assistant, so as to relax the muscles inserted in the toe. The operator at the same time puts his arms round the haunch, places his hand upon the outer angle of the patella, and keeps forcibly depressing that part, at the same time endeavoring to pull the bone forwards and upwards, in order that he may enable the extensor muscle to draw it back again into its place. A snap is the signal of success. The horse should have his head racked up for a few days, and a strong pitch plaster applied to the joint, or the dislocation will be very likely to recur.

SPLINT.

On the first appearance of this disease the parts should be well fomented, or a hot poultice of linseed for twenty-four hours; then *Rhus Tox* (20) lotion should be rubbed in thrice daily. After each rubbing apply a compress soaked with the lotion to the affected parts: this should be well covered to prevent evaporation. At the same time ten drops of the tincture of *Rhus Tox* (20), as prepared for internal use, may be given night and morning. Should no improvement take place from the treatment in ten or twelve days, it may be advisable to perform the following operation. Make a small opening in the skin just below the splint, and introduce a knife with a convex edge; as soon as the knife reaches the centre of the splint, turn it edge downwards, and make two or three free incisions into the periosteum. Withdraw the knife, and dress the wound with a wet bandage.

SPRAINS.

This consists in affording rest to the limb, mitigating the pain, and subduing inflammatory action. Apply a compress moistened with *Arnica* lotion; and over this a covering of thick calico or flannel, which must be secured by means of a bandage, but not so tight as to impede the circulation. Before applying the bandage the part may be rubbed with the lotion. *Arnica* (3) may be given internally at the same time, every three or four hours. If there is much inflammation present, *Aconitum* (1) may be alternated with *Arnica* four times daily.

In severer sprains it will often be necessary to use *Rhus* lotion after the *Arnica*, and in the same manner, especially if the heat and pain have been lessened by the latter, but not the swelling.

In some sprains, especially if not seen for some hours after the infliction of the injury, it will be advisable to precede the medicinal treatment by fomentations with warm water, and afterwards to dry the parts with a cloth before applying the lotion. After the swelling has subsided, the animal may only very gradually return to its accustomed work.

STRINGHALT.

This term is applied to a peculiar movement of the hind leg—a twitching, or sudden and convulsive picking up of the limb. The hock is bent, and the leg is carried very high. It is not a lameness, for there is no dropping on the other leg; and when the horse is ridden, the halt is not felt by the rider, like hock lameness. In some cases the hock is affected, and in others the pressure of some exostosis on a nerve has been supposed to cause the disorder. But it is probably caused by irregular spasmodic action of the muscles, chiefly the extensor pedis, due to some obscure disease of the nerves.

It generally affects one or both hind legs, sometimes a fore leg, and varies in intensity. It may be most easily observed when the horse is first put in motion, or in the act of turning. It increases as the animal grows older, and although for a time no inconvenience attend it, it ultimately becomes unsightly and interferes with action. The horse is able to do any kind of work, but stringhalt constitutes a form of legal unsoundness. Though regarded as incurable, *Nux Vomica* might be productive of benefit.

GREASE—SCRATCHES.

In the simple form should be

Arsenicum (4).—Administer this remedy two or three times daily; and use externally the *Arsenical* lotion, made as directed.

Aconitum (1).—Should the animal be feverish, the administration of *Arsenicum* may be preceded or alternated with two or three doses of *Aconitum*.

Sulphur.—The early use of the above remedies, followed by a few doses of *Sulphur*, will generally effect a cure.

In the ulcerative form we prefer:

Arsenicum, both internally and externally, is still the best remedy.

Silicea (22).—If the discharge is very abundant, give two doses daily, for several days.

Nux Vomica (17)—If the disease has been caused, or is accompanied by deranged stomach, and the general health of the animal is much affected. A dose every four hours, in alternation with *Arsenicum.*

In the grapy form the following:

Arsenicum (4).—This medicine should be used both internally and externally.

Sulphur.—In cases of considerable duration this remedy will be found most useful; it may be given intermediately, or when the animal has so far improved as to render any other unnecessary.

Regard must be had to cleanliness, and also to diet, which must be as unstimulating as possible. Remove the hair from the sores, cleanse them well with tepid water, and, if there be much pain, apply a bran poultice night and morning. If the animal is not worked, it must be exercised daily.

It will often be necessary to change the diet, especially if the animal has been fed with bean meal, oats, etc. Carrots and boiled barley may be allowed, and the food only given in moderate quantities.

CRACKED HEELS.

Remove the hair from the affected heels close to the skin, and foment the limbs by placing them in a bucket of warm water. This will remove all the dirt from the cracks, and those portions of hair which may fall in during clipping; after fomenting the limbs for fifteen or twenty minutes, rub them perfectly dry with a wash-leather or a soft cloth. If the affection be very severe, the application of a linseed-meal poultice to the heels will prove of great service; this, however, need not be repeated more than once or twice. In addition to these measures, after carefully drying the parts, bathe the cracks

morning and evening by means of a clean, soft sponge, first with warm soap-and-water, then after being gently dried, with *Arsenical* lotion, one drachm to two ounces of water, or a lotion composed of equal parts of *Sulphurous Acid*, *Glycerine*, and water. At the same time give *Arsenicum* (4) in ten drop doses, night and morning, an hour before the usual feeding time, till improvement takes place. A dry flannel bandage to the legs, put on moderately tight, will be of much service when the inflammation is not of an active character.

The administration of a dose of *Sulphur*, in the morning, for several days, when recovery is nearly complete, will do good.

Moderate daily exercise for a couple of hours on dry ground will prove beneficial. The diet should consist of mashes, carrots and good hay.

BROKEN KNEES.

In order to ascertain the extent of the disaster, the first thing to be done, after a horse has fallen and injured its knees, is to remove all dirt and blood by careful washing with tepid water. Should the knees be merely grazed, the use of *Arnica* lotion applied two or three times daily, with rest, will alone be necessary to effect a cure. If the skin and parts underneath are torn, the divided parts must be united together as completely as possible, and a piece of lint, saturated with *Arnica* lotion, kept to the leg by means of a bandage. At the same time give *Arnica* (3) internally every three hours. If the animal is feverish, give *Aconitum* (1) and *Arnica* in alternation every three hours. If, notwithstanding, the wound will not heal without the formation of matter, hot fomentations must be applied several times a day for three or four days, and afterwards, when the injured parts present a clean, raw surface, *Calendula* lotion must be applied instead of *Arnica* lotion. The horse's head should be racked up for a few days, or placed in cradles to keep him from biting the wound.

CUTTING OR BRUSHING.

The swelling and soreness must be treated with the application of cloths saturated with *Arnica* lotion. The leg must then be protected by a woolen boot turned down over the fetlock joint. Rest is neces-

cessary till the bruise be healed; and meanwhile, if the horse has been underfed, his constitution should be strengthened.

OVER-REACH AND TREAD.

Any portion of detached horn or bruised skin should be removed with scissors, and the wound cleansed and dressed with *Arnica* lotion, after being well fomented by placing the foot in a bucketful of warm water. If from neglect the suppurative process has become established, *Calendula* lotion should be used instead of *Arnica* lotion.

PRICK OF FOOT.

If it is a recent wound, after the nail is pulled out pour a few drops of the tincture of *Arnica* into the cavity; and if the injury is soon removed, carefully insert another nail. If the wound is of some days' duration, remove the shoe, and examine each single nail; a little blackish pus will be found attached to the nail that occasioned the wound; or by tapping the border of the hoof with a small hammer, the horse will twitch when the sore spot is touched. Enlarge the wound sufficiently to admit of the escape of the pus, and fill it up with cotton, saturated with *Arnica* lotion, and replace the shoe with a few nails, in order to prevent impurities from getting into the wound. This application may have to be renewed.

When the pus decreases, the swelling abates, and the lameness becomes less, we may conclude that the wound is healing.

Arnica (3) and *Aconitum* (1) may be given internally every three or four hours in alternation, if there be much fever.

QUITTOR.

Free exit must be given to the matter in the sole, whenever that can be done, and the sinuses injected with *Calendula* lotion, (one part to eight of water), morning and evening, after which the foot should be enveloped in a warm turnip or meal poultice. The wall of the foot under the conical swelling or the coronet should be rasped until it springs under the thumb.

As soon as the inflammation is subdued and the matter ceases, we may discontinue the poultice, and simply dress the sore on the coro-

net with *Calendula* lotion. The lower portion of the hoof of the deceased quarter should be cut away, so that it cannot touch the bar shoe, which is the most appropriate for this disease. In cases of quittor of long standing, when the discharge is thin or of a greenish color, the best injection is *Corrosive Sublimate*, five grains to the ounce of water which may be repeated daily until a cure is effected. The administration of *Silicea*, internally, will assist materially.

CORNS.

First pare out the corn and remove all dirt. The foot must be dressed with the tincture of *Arnica*, applied by means of cotton; afterwards the shoe should be tacked on lightly, with a leather sole between it and the foot, so as to remove the pressure from the affected part. In those instances in which the lameness is severe, and the corn is of very recent date, the foot should be poulticed with a mixture of linseed meal, bran and hot water. A poultice is the more necessary when the corn inflames and suppurates. After the poultice apply *Arnica* lotion.

MISCELLANEOUS DISEASES.

GLANDERS AND FARCY.

Arsenicum (4).—In the incipient stage of glanders, and also in the more advanced stage, when the discharge is attended with emaciation, poor appetite, and swelling of the lips and eyelids. A dose twice daily.

Mercurius.—If the discharge from the nose is abundant, greenish, or bloody, and of a bad smell, and the glands under the jaws are swollen and painful.

Sulphur.—This remedy will be required after the more prominent symptoms of the disease have yielded to the above medicines; it may also be occasionally alternated with other remedies, especially if the disease is obstinate and tedious.

It is of great service to wash the sick horse all over daily, in summer and winter with tepid water; and afterwards to cover it with

horse cloths. The stable should be well ventilated and kept clean, and litter renewed as often as necessary; and the horse exercised daily in the open air. The diseased animal must be separated from sound ones, and one person have the entire charge of it.

LOCK JAW.

Camphor is an excellent remedy to commence the treatment with, when the disease has been induced by cold or wet, or other depressing circumstances. Administer ten drops about every twenty minutes, till warmth is restored to the general system.

After this, administer *Belladonna* (5) every hour till the jaws begin to relax, when it may be given less frequently. This will be found a most valuable agent in tetanus.

Nux Vomica (17) is a leading remedy in this disease, especially if the digestive system has been previously disordered. It is indicated by rigidity of the muscles, increase of spasm by the least excitement, twitchings and jerks.

Aconitum (1).—If at the commencement, or during the course of the attack, inflammatory symptoms are present, it will be desirable to administer a few doses of *Aconitum*, and afterwards proceed with the remedy next indicated.

Arnica (3).—This will be the most appropriate medicine to begin with if the disease arises from an injury; it may be given alone or in turns with *Belladonna*, *Nux Vomica* or *Aconitum*, every one, two, three or four hours. At the same time, the wound must receive prompt attention, according to the instructions given in other parts of this book.

MEGRIMS—EPILEPSY.

As soon as the animal threatens to fall, or is actually down, remove its collar and harness, so as to give it a chance of breathing more freely, and of starting up. Give a dose of *Belladonna* (5) as soon as possible, and repeat it for several times as quickly as the urgency of the symptoms appear to demand. Afterwards, this medicine may be administered once or twice a day for a week or ten days, finishing with two or three doses of *Sulphur*.

Nux Vomica (17).—If the animal suffers from derangement of the stomach, or constipation, this medicine may be useful after the fit has passed away.

STRANGLES.

Nux Vomica (17).—Very useful at the commencement of the disease, with loss of appetite, cough with vomiting, constipation, watery discharge from the nose. Numbers of cases have been cured with this medicine alone.

Aconitum (1).—When the disease begins with quick pulse, accelerated breathing, loss of appetite, dry, hot nose, shivering. A dose every two or three hours for several times.

Arsenicum (4).—Weakness and wasted condition; almost entire loss of appetite; thick, offensive or bloody discharge from the nose; diarrhœa and exhaustion.

Mercurius.—Eyes inflamed; eyelids glued together: saliva hanging about the mouth; shivering; diarrhœa.

Phosphorus (18).—Quick breathing; discharge of offensive matter from the eyes, adhering to the eyelids and eye; painful cough, with bloody froth running from the mouth; paralysis.

Ipecacuanha (15).—Diarrhœa and vomiting.

Sulphur.—If after the disease appears to be cured some of the symptoms return.

MILK FEVER.

Aconitum (1.)—This is the first and chief remedy, especially when the symptoms of fever are predominant, with quick bounding pulse, hurried breathing, scanty urine, and suppression of milk. A dose every half-hour. The prompt use of this remedy often brings about recovery.

Belladonna (4).—When four or five doses of *Aconitum* have been administered, and there remains a furious and anxious expression of countenance, eyeballs thrust out, struggling and general restlessness, give this remedy in alternation with the former every two hours: that is *Belladonna* one two hours and *Aconitum* next two hours. If the symptoms are more or less severe, the administration of the medicine must be regulated accordingly.

Bryonia (6).—Should the disease appear to affect the chest more than the head, *Bryonia* must be alternated with *Aconitum* instead of *Belladonna.*

Ammonium Causticum.—If, after the administration of several doses of *Aconitum*, the disease advances in spite of that medicine, and there is great swelling of the paunch, symptoms of intense pain, coldness of the extremities, oppressed breathing, and slow pulse, give a dose of this medicine, every twenty or thirty minutes, till the swelling subsides.

Arsenicum (4) may follow the last named remedy, when the swelling is reduced, and a sleepy condition remains, with insensibility to pain, inability to hold up the head, and coldness of the body.

Phosphorus (18).—In the extremely prostrate condition with typhoid symptoms this medicine has been restorative. The indications are great weakness, paralytic lassitude, anguish, uneasiness, distention of the abdomen.

Nux Vomica (17).—When the cow has somewhat recovered, but with remaining weakness in the hind quarters, so that the animal can only rise up on her fore legs, and there is confinement of the bowels, give a dose of this remedy thrice daily.

Sulphur.—When the animal appears to have recovered, the administration of this remedy in the morning, an hour before feeding, for several days, may prevent relapses.

MANGE.

The most efficient of all remedies in this complaint is *Sulphur*, which must be used both locally and internally. For local use, an ointment may be made in the proportion of one ounce of *Sulphur* to two ounces of lard; these must be intimately mixed, and applied by means of a clean, large-sized painter's brush, or other suitable means. Great pains must be taken to ensure the access of the application to those ramifications of the skin in which the little creature is securely seated, and to extend it to every part where it exists; otherwise it will again spread, as a few of them will be sufficient to produce an entire colony. The ointment may be applied night and morning, and if the

above directions are carried out, three or four dressings will generally suffice to affect a cure.

The best remedies for internal treatment are: *Sulphur* and *Arsenicum*, the former should be given in the morning, and the latter in the evening, an hour before the usual time of feeding.

DROPSY.

Arsenicum (4).—This is one of the best remedies in all forms of dropsy; especially when there are great weakness, hurried breathing, thirst, urinary difficulties, loss of appetite, dullness of spirits, and exhausting diarrhœa. A dose four times daily.

China (9).—Dropsy from bleeding, severe purging, or any tedious, exhausting complaint. This remedy may often be given in turns with *Arsenicum*, every three or four hours.

Dulcamara (12).—Dropsical swellings appearing suddenly after a cold.

Helleborus (13).—Very rapid accumulation of water in the belly and chest, with extreme weakness.

Sulphur.—When improvement takes place, and the remedies which produced it seem no longer required, this remedy, administered twice daily for a few days, often completes the cure.

WORMS.

The first thing to do is to give the animal sound, nutritious food, and one or more of the following medicines.

Cina (10).—If the animal has a voracious appetite at one time, and poor appetite at another, bowels bound or purged, fetid breath, fits, rough coat, and other worm symptoms. A dose night and morning, one hour before feeding, for several days; and if improvement takes place, continue the medicine till the animal is well.

Arsenicum (4).—If the above medicine fails to do good, or only partial benefit results from it, give this remedy as directed for *Cina*, in two-grain doses of the trituration.

Filix Mas.—This is the most effectual remedy for tape-worm.

It should ever be borne in mind that the treatment should not merely be directed towards the destruction or expulsion of the worms,

but to the improvement of the digestive organs, and so to prevent their development. We recommend *Rock Salt* as a preventive of worms. Place a lump of it in one corner of the hay-rack, so that animals may lick it when they choose to do so.

WOUNDS.

Apply cloths saturated with *Arnica* lotion. These must be renewed several times daily. In deep wounds, injections of *Arnica* have to be made, and the healing of the edges prevented, lest deep-seated suppurations should set in. In wounds of a severe character, in addition to the preceding means, *Arnica*, as prepared for internal use, should be given every three or four hours.

If the wound is very severe, and the bleeding is considerable, *Calendula* lotion will often be found preferable to *Arnica*, and should be substituted for it, and used in the same manner. This remedy should not be overlooked in the various injuries which befall domestic animals.

Aconitum (1).—If fever arise, *Aconitum* should be given every three or four hours.

BRUISES.

The great object is to allay irritation, prevent inflammation, and promote the absorption of any blood that may have been effused. This can be best obtained by the following means:

As soon as possible after the accident the parts should be bathed freely with *Arnica* lotion; or they may be covered with four or five folds of white cotton or linen rags saturated with the lotion, the rags are to be rewetted as often as they become dry. If the contusion be in such a position as to be interfered with by work or exercise, the animal should be kept at rest as long as may be necessary. Whilst the local treatment is being carried on, a dose of *Arnica* internally three times a day will materially expedite the cure.

FOOT AND MOUTH DISEASE.

The principal remedies are: *Arsenicum*, *Belladonna* and *Mercurius*.

Arsenicula (4).—As soon as the symptoms of dullness, impaired appetite, and unthrifty appearance of the skin are perceived, give ten

drops in a few spoonfuls of water, or two grains every three hours. If administered early, this remedy may alone effect a cure.

Belladonna (5).—If the eyes are dim and watery, the udder painful, hot and swollen, and the hoofs burning and sensitive to the touch, give this remedy the same as directed under *Arsenicum*.

Mercurius.—If the disease has attained a more advanced stage, and is marked by the extreme symptoms before described, such as bursting of the blisters, the formation of deep and ragged ulcers, the discharge of stringy, slimy, bloody matter, swollen face, etc., give ten-drop doses of the trituration every four hours.

The animal should be kept housed in a quiet stall, with plenty of fresh air of a moderate temperature, abundance of soft straw, as much water as it wants, and sufficient soft food, such as milk, meal and water, boiled grain, mash or bran. The feet and hoofs should be occasionally bathed with warm water. When the udder is affected it should be frequently stripped of its contents.

In all cases, an affected animal must be completely separated from all others, and if the disease has far advanced before treatment is commenced, it is often better to kill it at once, and to bury the carcass deep in the earth.

In every serious case, consult the other Departments of this work for more detailed explanations and symptoms.

THE 2:25 LIST.

Comprising the names of all horses that have trotted one mile in harness in 2:25 or better, with description, sire and dam, place and time of performance, and best record.

[From *Wilkes' Spirit of the Times.*]

2.09¼.

Maud S, ch m, by Harold, dam Miss Russell, by Pilot Jr., at Lexington, Ky., Nov. 11, 1884.

2.10.

Jay Eye See, blk g, by Dictator, dam Midnight, by Pilot Jr., at Providence, R. I., Aug. 1, 1884.

2.11¼.

St. Julien, b g, by Volunteer, dam Flora, by Sayers Harry Clay, at Hartford, Conn., Aug. 27, 1880.

2.13¼.

Mary Cobb, b s, by Happy Medium, dam Lady Jenkins, by Black Jack, at Providence, R. I., Sept. 30, 1884.
Rarus, b g, by Conklin's Abdallah, dam Nancy Awful, by Telegraph, at Buffalo, N. Y., Aug. 3, 1878.

2.13¾.

Phallas, b s, by Dictator, dam Betsy Trotwood, by Clark Chief, at Chicago, July 14, 1884.

2.14.

Clingstone, b g, by Rysdyk, dam Gretchen, by Chosroes, at Cleveland, O., July 28, 1882.
Goldsmith Maid, b m, by Alexander's Abdallah, dam by Abdallah, at Mystic Park, Boston, Sept. 2, 1874.
Trinket, b m, by Princeps, dam Ouida, by Rysdyk's Hambletonian, at Morrisania, N. Y., Sept. 22, 1881.

2.14¾.

Hopeful, gr g, by Godfrey's Patchen, dam by the Bridgham Horse, at Minneapolis, Minn., Sept. 5, 1878.

2.15.

Harry Wilkes, b g, by George Wilkes, dam Mollie Walker, by Captain Walker, at Springfield, Mass., Sept. 4, 1884.
Lula, b m, by Alexander's Norman, dam Kate Crockett, by imp. Hooton, at Buffalo, N. Y., Aug. 10, 1875.

2.15¼.

Smuggler, b s, by Blanco, son of Iron's Cadmus, dam a pacing mare, at Hartford, Conn., Aug. 31, 1876.

2.15½.

Clemmie G., ch m, by Magic, dam Ned, by Berkley's Edwin Forrest, at Providence, R. I., Sept. 10, 1884.
Hattie Woodward, b m, by Aberdeen, dam untraced, at Buffalo, N. Y., Aug. 7, 1880.

2.16¼.

Edwin Thorne, ch g, by Thorndale dam Lady Lightfoot, by Ashland, at Buffalo, N. Y., Aug. 9, 1884.
Fanny Witherspoon, ch m, by Almont, dam Lizzie Witherspoon, by Gough's Wagner, at Chicago, Oct. 3, 1884.
Lucille Golddust, b m, by Golddust, dam a pacing mare, by Bald Hornet (?), at Rochester, N. Y., Aug. 10, 1877.
Maud Messenger, b m, by Messenger Chief, dam Eliza Jane, by Gentle Breeze, at Hartford, Conn., Sept. 6, 1884.
Wilson, b g, by George Wilkes, dam Miss Coons, by Clark Chief, at Cleveland, O., Aug. 1, 1883.

2.16½.

American Girl, b m, by Amos' C. M. Clay, dam unknown, at Albany, N. Y., Sept. 25, 1874.
Darby, b g, by Delmonico, dam unknown, at Utica, N. Y., Aug. 22, 1879.
Jerome Eddy, b s, by Louis Napoleon, dam Fanny Mapes, by Alexander's Abdallah, at Buffalo, N. Y., Aug. 3, 1882.
Phil Thompson, gr g, by Red Wilkes, dam Gray Nellie, by John Dillard, at Cleveland, O., Aug. 2, 1884.

2.16¾.

Charley Ford, gr g, by McKesson's Gray Eagle, dam unknown, at Chicago, Ill., July 23, 1880.
Occident, br g, by Doc, dam unknown, at Sacramento, Cal., Sept. 17, 1873.

2.17.

Direotor, blk s, by Dictator, dam Dolly, by Mambrino Chief, at Cleveland, O., Aug. 1, 1883.
Gloster, b g, by Volunteer, dam Black Bess, by Stockbridge Chief, at Rochester, N. Y., Aug. 14, 1874.
Majolica, b g, by Startle, dam Jessie Kirk, by Clark Chief, at Morrisania, N. Y., June 22, 1883.

2.17¼.

Black Cloud, blk s, by Ashland Chief, dam the Cluke Mare, by New York Beauty, at Chicago, Ill., July 22, 1882.
Dexter, br g, by Rysdyk's Hambletonian, dam Clara, by Seely's American Star, at Buffalo, N. Y., Aug. 14, 1867.
Piedmont, ch g, by Almont, dam Mag Ferguson, by Mambrino Chief, at Chicago, Ill., July 19, 1881.
So So, b m, by George Wilkes, dam Little Ida, by Edwin Forrest, at Hartford, Conn., Aug. 26, 1881.

2.17½.

Phyllis, br m, by Phil Sheridan, dam by Tom Sayers, son of Canadian Grey Eagle, at Mystic Park, Boston, Sept. 19, 1883.
Robert McGregor, ch s, by Major Edsall, dam Nancy Whitman, by American Star, at Fort Worth, Tex., Nov. 23, 1883.
Santa Claus, b s, by Strathmore, dam Lady Thorne Jr., by Williams' Mambrino, at Chicago, Ill., July 10, 1881.

2:17¾.

Duquesne, ch s, by Tippo Bashaw, dam Wild Rose, by Rysdyk's Hambletonian, at Pittsburgh, Pa., July 27, 1883.
Hannis, ch s, by Mambrino Pilot, dam Lady Stewart, at Hartford, Conn., Aug. 26, 1880.
Sally Benton, gr f (4), by Gen. Benton, dam Sontag Mohawk, by Mohawk Chief, at San Francisco, Cal., Dec. 13, 1884.

2.18.

Dick Swiveller, b g, by Walkill Chief, dam Madam Swiveller, by Henry Clay Jr., at Utica, N. Y., Aug. 22, 1879.
Edwin Forrest, b g, by Brannock's Ned Forrest, dam Fanny Munday, by the quarter-horse Smiling Tom, at Utica, N. Y., Aug. 14, 1878.
Great Eastern, b g, by Walkill Chief, dam by Reilly's son of imp. Consternation, at Buffalo, N. Y., Aug. 2, 1878.
Judge Fullerton, ch g, by Edward Everett, dam unknown, at Cleveland, O., July 28, 1875.
Kate Sprague, br m, by Gov. Sprague, dam Fan, by Lance, at Rochester, N. Y., Aug. 10, 1881.

Nettie, b m, by Rysdyk's Hambletonian, dam the County House Mare, by Seely's American Star, at Beacon Park, Boston, Sept. 11, 1874.
Proteine, b m., by Blackwood, dam Sally Chorister, by Mambrino Chorister, at East Saginaw, Mich., June 19, 1879.
Red Cloud, b g, by Legal Tender, dam unknown, at Buffalo, N. Y., Aug. 7, 1874.

2.18¼.

Catchfly, br m, by Administrator, dam Cachuca, by Almont, at Janesville, Wis., June 21, 1884.
Lady Maude, br m, by General Knox, dam Fanny, by Sabek, at Rochester, N. Y., Aug. 11, 1875.
Lady Thorn, b m, by Mambrino Chief, dam by Gano, at Providence, R. I., Oct. 8, 1869.
Lucy, b m, by George M. Patchen, dam by May Day, at Buffalo, N. Y., Aug. 9, 1872.
Midnight, blk g, by Peacemaker, dam by the old Drew Horse, at Buffalo, N. Y., Aug. 3, 1878.
Pickard, b g, by Abdallah Pilot, dam by Bourbon Chief, at Hartford, Conn., June 20, 1882.
Rosa Wilkes, b m, by George Wilkes, dam by Mambrino Patchen, at Cleveland, O., July 28, 1882.

2.18¾.

Colonel Lewis, gr g, by Rifleman, dam unknown, at San Francisco, Cal., Sept. 14, 1878.
Elvira, blk f (4), by Cuyler, dam Mary Mambrino, by Mambrino Patchen, at Cleveland, O., Sept. 26, 1884.
J. B. Thomas, b s, by Sterling, dam Lady Hooper, by Defiance, at Chicago, Ill., July 23, 1881.
Monroe Chief, br s, by Jim Monroe, dam Madam Powell, by Bay Chief, at Chicago, Ill., July 24, 1880.
Slow Go, rn g, by Young Sharatack, dam unknown, at Cleveland, O., July 26, 1877.
William H., b g, by Young Wilkes, dam by Daniel Webster, at Chicago, Ill., Aug. 19, 1882.

2.18¾.

Bonita, b f, by Electioneer, dam May Fly, by St. Clair (pacer), at Lexington, Ky., Oct 18, 1884.
Cleora, blk m, by Menelaus, dam Thornleaf, by Mambrino Patchen, at Chicago, Ill., Sept. 22, 1882.
Frank Landers, b g, by Saddling Buck, dam Roany, by Copperbottom, at Chicago, Ill., July 14, 1884.
Nutwood, ch s, by Alexander's Belmont, dam Miss Russell, by Pilot Jr., at Stockton, Cal., Nov. 27, 1876.
Patchen, ch g, by Kentucky Hunter, dam by Scott's Hiatoga, at Hartford, Conn., Aug. 28, 1880.

2:19.

Adele Gould, ch m, by Jay Gould, dam Emeline, by Henry B. Patchen, at Buffalo, N. Y., Aug. 4, 1882.
Albemarle, gr g, by Tom Hunter, dam by Blucher, at Hartford, Conn., Aug. 23, 1878.
Alley, b g, by Volunteer, dam by New York Black Hawk, at Chicago, Ill., July 25, 1879.
Bonesetter, b s, by Brooks' Horse, dam by Adams' Stump the Dealer, at Rochester, N. Y., Aug. 15, 1879.
Cozette, blk m, by Blumberg's Black Bashaw, dam unknown, at Rochester, Aug. 9, 1876.
Edward, ch g, by Fisk's Hambletonian (Masterlode), dam by Ohio Bacchus, at Providence, R. I., Sept. 3, 1878.
France's Alexander, blk s, by Ben Patchen, dam by Canada Jack, at Rochester, N. Y., July 4, 1881.
Graves, ch g, by Whipple's Hambletonian, dam Rosa Allen, at Stockton, Cal., Sept. 20, 1879.
Kitty Bates, gr m, by Jim Monroe (?), dam Pop Corn (pacer), at Buffalo, N. Y., Aug. 6, 1880.
Minnie R., b m., by J. C. Breckenridge, dam by Exchequer, at Chicago, Ill., July 17, 1882.
Wedgewood, br s, by Alexander's Belmont, dam Woodbine (dam of Woodford Mambrino), by Woodford, at Hartford, Conn., Aug. 28, 1880.

2:19¼.

Aldine, br m, by Almont, dam Mother Hubbard, by Johnson's Toronto, at Hartford, Aug. 31, 1882.
Bodine, b g, by Volunteer, dam by Sayres' Harry Clay, at East Saginaw, Mich, June 25, 1875.
Captain Emmons, ch g, by Continental, dam Nelly, by Tiger Morgan, at Providence, R. I., June 21, 1884.
Comet, b g, by Daniel Lambert, dam by Hiawatha, at Hartford, Conn., Aug. 29, 1877.
Croxie, b. m, by Clark Chief, dam Mollie Whitefoot, by Little Prum, at Buffalo, N. Y., Aug. 2, 1878.
Felix, b g, by Nutwood, dam Abdallah Maid, by Roe's Abdallah Chief, at Buffalo, N. Y., Aug. 8, 1884.
George Palmer, b g, by Ames' Bogus, dam by Old Henry Clay, at Providence, R. I., Oct. 8, 1869.
Guy Wilkes, b s (5), by George Wilkes, dam Lady Bunker, by Mambrino Patchen, at San Francisco, Oct. 11, 1884.
Iron Age, rn g, by Jules Jurgeosen, dam untraced, at Providence, R. I., Sept. 10, 1884.
Joe Bunker, gr g, by George Wilkes, dam by Seely's American star, at Morrisania, N. Y., June 21, 1883.
Keene, Jim, rn g, by Keene's Lookout, dam Laura Fair, by Morgan Rattler, at Buffalo, N. Y., Aug. 7, 1880.
Parana, b m, by Mambrino Hambletonian, dam Belle of Cayuga, by Hambletonian Prince, at Beacon Park, Sept. 8, 1880.
Sleepy Joe, br g, by Joe Thompson, dam unknown, at Cleveland, O., July 31, 1883.

2:19¼.

Abbotsford, b s, by Woodford Mambrino, dam Columbia, by Young Columbus, at San Francisco, Cal., Aug. 24, 1883.
Driver, b g, by Volunteer, dam Silvertail, by Seely's American Star at Prospect Park, L. I., Oct. 15, 1880.
Flash, blk m, by Bonesetter, dam by Sir Alfred, at Cleveland, O., Aug. 2, 1884.
Forest Patchen, br g, by King Patchen, dam by Flying Cloud, at Hartford, Conn., June 14, 1883.
Hinda Rose, b f (3), by Electioneer, dam Beautiful Bells, by the Moor, at Lexington, Oct. 12, 1883.
Modoc, ch g, by Aberdeen, at Mystic Park, Boston, Sept. 18, 1883.
Moose, b g, by Washburn Horse, dam the Morrisey Mare, by imp. Trustee, at Rochester, N. Y., Aug. 10, 1880.
Nellie R., ch m, by Gen. McClellan Jr., dam by Sam McClellan, at San Francisco, Cal., Aug. 24, 1883.
Overman, ch g, by Elmo, dam by Billy McCracken, at Rochester, N. Y., Aug. 16, 1883.
Romero, gr g, by A. W. Richmond, dam Gretchen, by Mambrino Pilot, at Stockton, Cal., Sept. 22, 1882.
Thomas L. Young, ch g, by Yellow Jacket, dam a pacing mare, by Bald Hornet, at Fleetwood Park, New York, Oct. 22, 1875.
Tony Newell, b g, at Rochester, N. Y., Aug. 15, 1883.
Tucker, ch g, by Strathmore, dam by Bob Henry, at Lexington, Ky., Oct. 9, 1883.
Troubadour, blk g, by Revenge, dam Illinois Maid, by Black Donald, at Buffalo, N. Y., Aug. 3, 1881.
Von Arnim, b s, by Sentinel, dam May Short, by Blood's Black Hawk, at Rochester, N. Y., Aug. 12, 1882.
Will Cody, b g, by Blue Bull, dam Celia, said to be by American Eclipse, at Chicago, Ill., July 23, 1880.

2:19¾.

Adelaide, b m, by Phil Sheridan, dam by Sam Houston, grandson of Vermont Black Hawk, at Buffalo, N. Y., Aug. 3, 1878.
Butterfly, br m (5), by Young Jim, dam Tanzy, by George Wilkes, at Mystic Park, Sept. 18, 1884.
Camors, blk g, by General Knox, dam unknown, at Buffalo, N. Y., Aug. 7, 1874.
Daisydale, b m, by Thorndale, dam Daisy, by Burr's Washington, at Cleveland, O., July 27, 1880.
Deek Wright, b g, by the Hinsdale Horse, dam unknown, at Buffalo, N. Y., Aug. 6, 1880.
Dr. Norman, b g, by Col. Moore, dam unknown, at Cleveland, O., Sept. 7, 1882.

Flora Temple, b m, by One-Eyed Kentucky Hunter, dam by Spotted Arabian, at Kalamazoo, Mich., Oct. 15, 1859.

John S. Clark, ch g, by Thomas Jefferson, dam by Scott's Huntoon, at Rochester, N. Y., Aug. 12, 1881.

Josephus, ch g, by Green's Bashaw, dam a Copperbottom pacing mare, at Hartford, Conn., Aug. 26, 1881.

2:20.

A. V. Pantlind, b g, by Hamlet, dam by the Goodrich Horse, at Cleveland, O., Aug. 2, 1884.

Annie W., ch m, by Bostick's Almont Jr., dam Mary M., at Cleveland, O., July 27, 1881.

Bay Frank, b g, by Tornado, dam by State of Maine, at San Francisco, Cal., Aug. 15, 1883.

Belle Bradfield, b m, by Viley's Cripple, dam Sally Chorister, by Mambrino Chorister, at Buffalo, N. Y. Aug. 5, 1879.

Belle Echo, b m, by Echo, dam Titus, by California Belmont, at Chicago, July 10, 1884.

Elaine, b m, by Messenger Duroc, dam Green Mountain Maid, by Sayres' Harry Clay, at San Francisco, Cal., Nov. 13, 1880.

Etta Jones, b m (converted pacer), by Parish's Crockett, at Rochester, N. Y., Aug. 12, 1879.

Fleety Golddust, gr m, by Golddust, dam a Morgan mare, at Mystic Park, Boston, Mass., Sept. 4, 1874.

Frank, blk g, by Young Oneida, dam unknown, at Poughkeepsie, N. Y., Aug. 23, 1877.

George Y., ch g, by Masterlode, dam by Magna Charta, at Rochester, N. Y., Aug. 14, 1883.

Humboldt, b g, by Stocking Chief, dam by Parish's Pilot, at Hartford Conn., Aug 23, 1881.

John H., b g, by Humberg's Black Bashaw, dam by Morgan Hunter, at Hartford, Conn., Aug. 23, 1878.

Little Fred, b. g., by Eastman's Morgan, dam by Simpson's Blackbird, at Cleveland, O., July 26, 1877.

Mambrino Gift, ch s, by Mambrino Pilot, dam Waterwitch, by Pilot Jr., at Rochester, N. Y., Aug. 13, 1874.

May Queen, b m, by Alexander's Norman, dam Jennie, by Crockett's Arabian, at Utica, N. Y., Aug. 17, 1875.

Nancy Hackett, rn m, by Wood's Hambletonian, dam Hackett Mare, at Buffalo, N. Y., Aug 3, 1878.

Orange Girl, b m, by Ryndyk's Hambletonian, dam Dolly Mills, by Seely's American Star, at Columbus, O., July 3, 1880.

Prospero, blk g, by Messenger Duroc, dam Green Mountain Maid, by Sayres' Harry Clay, at Poughkeepsie, N. Y., Aug. 23, 1877.

2:20¼.

Adelaide, b m, by Milwaukee, dam Minnie B., by Bay Mambrino, at Chicago, July 11, 1884.

Amy, b m, by Volunteer, dam Belle Brandon, by Ryndyk's Hambletonian, at Hartford, Conn., June 25, 1879.

Belle F., b m, by Masterlode, dam Belle Hastings, by Magna Charta, at Springfield, Mass., Sept. 2, 1881.

Billy Button, ch g, by Hambletonian Prince, dam by Paige's Logan, at Washington, D. C., July 16, 1883.

Brandy Boy, b g, by Admiral Patchen, at Hartford, Conn., June 22, 1882

Buzz Medium, b m, by Happy Medium, dam by Nonpareil, at Pittsburgh, Pa., July 11, 1882

Capt. Lewis, ch g, by Spink, dam Lady Jones, by Wallace's Phenomenon, at Springfield, Mass., Sept. 6, 1882.

Early Rose, ch m, by Almont, dam Jenny, by Flying Cloud, at Hartford, Conn., June 21, 1882.

Fanny Robinson, b m, by Blood Chief, dam by Alexander's Norman, at St. Louis, Mo., Oct. 2, 1879.

Fred Douglas, ch s, by Green's Bashaw, dam Nancy Bell, by Gale's Morgan, at Chicago, Ill., July 21, 1882.

H. B. Winship, blk g, by Ariosto, dam Willful, by Colonel Moulton, at Providence, R. I., June 20, 1881.

Henry, b g, by Harry Lathrop, dam Flora, breeding unknown, at Beacon Park, Boston, Mass., June 23, 1871.

J. P. Morris, br g, by R. R. Morris, dam Brown Bess, by Young Retriever, at Mystic Park, Boston, Mass., Sept. 16, 1882.

Lizzie M., br m, by Thomas Jefferson, dam Queen Pin, by Legal Tender (?), at Albany, N. Y., Sept. 25, 1884.

Louise N., b m, by Alpine, dam own sister to Young Columbus, at Buffalo, N. Y., Aug. 7, 1883.

Lucy, blk m, by Royal Revenge, dam by unp. Harkaway, at East Saginaw, Mich., June 17, 1869.

Martha Washington, ch m, by Blucher (son of Ball's Black Eagle), dam unknown, at Beacon Park, Boston, Mass., June 10, 1877.

Mozo-Manie, ch g, by General Morgan (the Kurtz Horse), dam Old Bell, by Brown's Bellfounder (?), at Cleveland, O., July 24, 1877.

Nuiad Queen, b m, by Goodling's Champion, dam Tackey, by Pilot Jr., at Hartford, Conn, June 21, 1882.

Onward, b g, by Knickerbocker, dam by Reserve, at Mystic Park, Sept. 17, 1884.

Sheridan, b g, by Edward Everett, dam by Eureka (?), at Beacon Park, Boston, Mass., Sept. 7, 1869

Silverton, b g, by Blue Bull, dam Silvercila, at Pittsburgh, Pa., July 14, 1881.

St. Albans, blk g, by George Monmouth Patchen, dam by Daniel Boone, at Pittsburgh, Pa., July 18, 1884.

Voltaire, br s, by Tattler, dam Young Portia, by Mambrino Chief, at Springfield, Mass., Aug. 30, 1881.

Zoe B., ch m, by Blue Bull, dam Mila C.'s dam, at Springfield, Mass., Aug. 28, 1883.

2:20½.

Albert W., b s, by Electioneer, dam by John Nelson, at San Francisco, Aug. 9, 1884.

Arab, b g, by Arthurton, dam Lady Hamilton, pedigree unknown, at San Francisco, Aug. 2, 1884.

Chance, ch g, by Blue Bull, dam a pacing mare by a horse called Sir Henry, at Buffalo, N. Y., Aug. 8, 1879.

Earl, ch g, by Young Revenue, dam unknown, at Rochester, N. Y., Aug. 13, 1884

Frank, b g, by Abraham, dam Boot, by Green Mountain Boy, at Island Park, Sept. 26, 1884.

Glendale, b g, by Mambrino Wagner, dam Rosedale, by Berkley's Edwin Forrest, Hartford, Conn., Aug. 24, 1880.

Governor Sprague, blk s, by Rhode Island, dam Belle Brandon, by Ryndyk's Hambletonian, at Poughkeepsie, N. Y., Aug. 22, 1876.

Irene, gr m, by Dusty Miller, dam Minnie, by Abdallah, at Prospect Park, Long Island, May 30, 1860.

Lida Bassett, b m, by Forest King, dam by Alcalde, at Cleveland, O., July 31, 1879.

London, ch g, by Mambrino Patchen, dam by Edwin Forrest, at Cleveland, O., July 26, 1882.

Lynwood, gr s, by Clinker, dam Belton Maid, untraced, at Chicago, July 7, 1884.

Noontide, gr m, by Harold, dam Midnight, by Pilot Jr., at Hartford, Conn., June 23, 1880.

Sam Purdy, b s, by George M. Patchen Jr., dam Whiskey Jane, by Illinois Modoc, at Buffalo, N. Y., Aug. 2, 1879.

Secret, b m, by Strathmore, dam Amanda, by Waxey, at Pittsburgh, Pa., July 16, 1884.

Stephen G., b g, by Knickerbocker, dam Sunbeam, by Volunteer, at Providence, R. I. Sept. 30, 1884.

Walnut, b g, by Florida, dam Relief, by Messenger Hambletonian, at Springfield, Mass., Sept. 4, 1884.

2:20¾.

Abe Downing, b s, by Joe Downing, dam by Harrison, Buffalo, N. Y., August 2, 1882.

Huntress, b m, by Volunteer, dam Lady Sears (dam of Trio, 2:29¾), by Seely's American Star, at Belmont Park, Philadelphia, Pa., June 6, 1876.

King William, blk g, by King William, dam by Pacing Abdallah, at Cleveland, O., July 27, 1882.

Lysander Boy, ch g, by Lysander, dam by Winecreek Black Hawk, at Buffalo, N. Y., July 31, 1878.

Morse's Yellow Dock, ch m, by Clark's Mohawk Jr.,

dam by Copperbottom, at Utica, N. Y., Aug. 16, 1882.

Mountain Boy, b g, by Edward Everett, dam by Gridley's Roebuck, at Mystic Park, Boston, Mass., July 3, 1868.

Tariff, b s, by Clarion Chief, dam Lillian, by Favorite, at Chicago, Ill., July 17, 1882.

Young Fullerton, ch s, by Edward Everett, dam Flora, by Rich's Jupiter, at Hartford, Conn., Sept 4, 1883.

2:21.

Adair, b g (5), by Electioneer, dam Addie Lee, by Culver's Black Hawk, at Sacramento, Cal., Sept. 20, 1884.

Albert France, b g, by George Wilkes, dam by Rysdyk's Hambletonian, at Providence, R. I., Sept 12, 1884.

Banquo, b g, pedigree unknown, at Utica, N. Y., Aug. 17, 1877.

Castle Boy, b g, by Gooding's Champion, dam by Finley's Morgan Tiger, at Buffalo, N. Y., Aug. 4, 1874.

Castleton, b g, by Chesbrough, dam unknown, at Rochester, N. Y., Aug. 13, 1879.

Clementine, b m, by Addison Jr., dam by Wiltsey's Emigrant, at Rochester, N. Y., Aug. 10, 1875.

Crown Point, ch s, by Speculation, dam unknown, at Sacramento, Cal., Sept. 24, 1880.

Doty, b g, by Challenge, dam a Belmont mare (?) at Santa Clara, Cal., Oct. 3, 1878.

Gazaffe, b m, by Rysdyk's Hambletonian, dam Hattie Wood, by Harry Clay, at Prospect Park, L. I., Oct. 22, 1872.

General Garfield, b g, by Kentucky Black Hawk, dam by Captain Walker (pacer), at Utica, N. Y., Aug. 17, 1875.

General Grant, ch s, by Wapsie, dam by Hanley's Hiatoga, at Rochester, N. Y., Aug. 9, 1876.

Helene, ch m, by Hambletonian Prince, dam the Maxwell Mare, at Morrisania, N. Y., Jan. 29, 1882.

Index, b g, by Jas. R. Reese, dam Rosina Bell, untraced, at Providence, R. I., Sept. 10, 1884.

Indianapolis, b s, by Tattler, dam Indiana, by Mambrino Chief, at Cleveland, O., July 25, 1878.

James H., b g, pedigree unknown, at Sacramento, Cal., Sept. 11, 1884.

Judge Davis, b g, by Joe Brown, dam Lady Sherman, by Milliman's Bellfounder, at Springfield, Mass., Sept. 2, 1884.

Kenilworth, b g, by Lothair, dam by Wilkes Booth, at Providence, Sept. 7, 1884.

King Philip, b s, by Jay Gould, dam Factory Girl, by Rysdyk's Hambletonian, at Cleveland, O., July 25, 1877.

Lady Pritchard, ch m, by Green Mountain Banner, dam by Flying Morgan, at Buffalo, N. Y., July 31, 1878.

Lucille, b m, by Exchequer, dam the Baleman Mare (pacer), at Buffalo, N. Y., Aug. 1, 1878.

Lumps, br s, by George Wilkes, dam by Pearsall, at Maysville, Ky., Sept. 20, 1882.

Manon, br m, by Nutwood, dam Addie, by Hambletonian Chief, at Sacramento, Cal., Sept. 14, 1884.

May Bird, blk m, by George Wilkes, dam by John C. Fremont, at Utica, N. Y., Aug. 16, 1877.

Nickel, b g, by Oak Hill, dam unknown, at Hartford, Conn., June 15, 1883.

Pilot Knox, blk s, by Black Pilot, dam Nancy Knox, by Colonel Ellsworth, at Mystic Park, Oct. 17, 1884.

Powers, br g, by Volunteer, dam Jennie, by American Star, at Utica, N. Y., Aug. 17, 1878.

Richard, ch g, by Blue Bull, dam by Sir Leslie, at Utica, N. Y., Aug. 17, 1878.

Scott's Thomas, b s, by General George H. Thomas dam Lady Rice (dam of Scott's Chief), by Whiteball, at Buffalo, N. Y., Aug. 2, 1878.

St. Cloud, b g, by Conklin's Star, dam by Bay Richmond, at Rochester, N. Y., Aug. 14, 1883.

Susie, ch m, by Hampshire Boy, dam by Wildair, at Belmont Park, Philadelphia, Pa., June 7, 1876.

Vanderlynn, b s, by George M. Patchen Jr., dam by Joseph, at Sacramento, Sept. 20, 1884.

White Stocking, b g, pedigree unknown, at Utica, N. Y., Aug. 14, 1877.

Wildflower, b f (2), by Electioneer, dam Mayflower, by St. Clair, at San Francisco, Cal., Oct. 22, 1881.

2:21¼.

Amelia C., b m, by Dexter Bradford, dam by Volunteer (?), at Beacon Park, Oct. 10, 1884.

Bayonne Prince, blk s (5), by Kentucky Prince, dam Emily C., by State of Maine, at Pittsburgh, Pa., July 18, 1884.

Bessie, ch m, by Blue Bull, dam by Patrick Henry, at Buffalo, N. Y., Aug. 7, 1884.

Bronze, b m, by Morrison's Morgan Messenger, dam by Christy's Black Snake, at Cleveland, O., July 31, 1883.

Brigadier, by Happy Medium, dam Lady Turner, by Frank Pierce, at Marysville, Cal., Sept. 7, 1883.

Cornelia, blk m, by Colonel Bonner, dam unknown, at Utica, N. Y., Aug. 18, 1882.

Dan Smith, b g, by Reporter, dam by Young Trustee, son of imp. Trustee, at Springfield, Mass., Aug. 7, 1880.

Ezra L., rn g, by Gideon, dam by Tom Benton, at Hartford, Conn., June 15, 1882.

Hambletonian Bashaw, b s, by Green's Bashaw, dam Lady Byron, by Gage's Logan, at Chicago, Ill., July 24, 1880.

Hambletonian Mambrino, b s, by Curtis' Hambletonian, dam Topsy, by Alexander's Abdallah, at Point Breeze Park, Philadelphia, Oct. 4, 1878.

Mambrino, b s, by Edward Everett, dam Mambrina, by Mambrino Chief, at Hartford, Conn., Aug. 27, 1879.

Howard Jay, rn g, by Wood's Hambletonian, dam Emma Montour, by Seneca Chief, at Hartford, Conn., Sept. 4, 1883.

Independence, gr s, by Gen. Knox, dam by Gideon, at Morrisiania, N. Y., Oct. 6, 1881.

Ino, b m, by Chenery's Grey Eagle, at Springfield, Mass., Aug. 31, 1883.

Jersey Boy, b g, by Young Volunteer, dam Libbie, by Young Gen. Taylor, at Washington, D. C., May 7, 1881.

Kansas Chief, b g, by Young Josephus dam Ella, by Young Copperbottom, at East Saginaw, Mich., June 30, 1876.

Kentucky Wilkes, blk s, by George Wilkes, dam Minna, by Red Jacket, at Buffalo, N. Y., Aug. 6, 1880.

King Almont, b s, by Almont, dam Kate Crockett, by Crockett's Arabian, at Mystic Park, Boston, Mass., Nov. 2, 1883.

Kitty Patchen, ch m, by Jeb Stuart, dam by Hefling's Hiatoga, at Mystic Park, Sept. 17, 1884.

Mamie, b m, by Blue Bull, dam Silverella, at Springfield, Mass., Sept. 9, 1882.

Maybird, b m, by Jimmie, dam Kate Swift, by Champion Jr., at Janesville, Wis., June 20, 1884.

Prince, blk g, by Royal Reveuge, dam by Ferguson's Grey Eagle, at Chicago, July 4, 1884.

Sweetness, b m, by Volunteer, dam by Edward Everett, at Sacramento, Cal., Sept. 13, 1882.

Young Rolfe, b s, by Tom Rolfe, dam Judith, by Draco, at Springfield, Mass., Sept. 5, 1884.

2:21½.

Artillery, b s, by Rysdyk's Hambletonian, dam Wells' Star, by Seely's American Star, at Providence, R. I., July 24, 1884.

Bliss, br m, by Bayard, dam Dolly Hazard, by Sam Hazard, at Chicago, Ill., July 18, 1882.

Ewing, b g, by Primus, dam Lady Washington, at Cleveland, O., Sept. 5, 1882.

Jay Gould, b s, by Rysdyk's Hambletonian, dam Lady Sanford, by Seely's American Star, at Buffalo, N. Y., Aug. 7, 1872.

Jim Schriber, gr s, by Rhode Island, dam Dutch Girl, by Dusty Miller, at Cleveland, O., Sept. 26, 1884.

Mattie Graham, b m, by Harold, dam by Mambrino Chief, at Chicago, Ill., July 18, 1882.

Montgomery, b s, by Inheritor, dam Bazaar, by Kentucky Chief, at Providence, R. I., Sept. 10, 1884.

Music, ch m, by Middletown, dam by Roe's Fiddler, at Hartford, Conn., Sept. 2, 1875.
Nellie G., br m, by Brentham, at Cleveland, O., July 31, 1883.
Red Cross, ch s, by Brigand, dam by Dole's Magna Charta, at Columbus, O., May 24, 1882.
Steve Maxwell, gr g, by Ole Bull Jr., dam by Grigsby's Matchless Whale, at Hartford, Conn., Aug. 28, 1880.
Thornburg, br g, by Judge Advocate, dam Lady Reno, by General Grant, at Buffalo, N. Y., Aug. 9, 1884.
Will Collender, br g, by Strader, dam Blossom, by a son of Grey Eagle, at Chicago, Ill., July 11, 1884.
Woodford Mambrino, b s, by Mambrino Chief, dam Woodbine, by imp. Woodford, at Minneapolis, Minn. Sept. 4, 1878.

2:21¾.

Charley Champlin, b g, by Messenger Duroc, dam by American Star, at Hartford, Conn., June 28, 1881.
Day Dream, ch f (4), by Cuyler, dam Lucia, by Rysdyk's Hambletonian, at Lexington, Ky., Oct. 10, 1883.
Early Dawn, b f (4), by George Wilkes, dam by Mambrino Star, at Lexington, Ky., Oct. 15, 1884.
Moisey, b m., by Whiteside's Black Hawk, dam Moll, by Dallas, at Hartford, Conn., Sept. 1, 1875.
Pancoast, b s, by Woodford Mambrino, dam Bicara, by Harold, at Lexington, Oct. 13, 1884.
Pilot R, b g, by Black Knight, dam by Joe Davis, at Beacon Park, Sept. 14, 1881.
Rosalind, b m, by Alexander's Abdallah, dam by Brown Pilot, at Point Breeze Park, Philadelphia, Pa., Sept. 27, 1873.
Rose of Washington, gr m, by Green's Bashaw, dam Lady McNair, at Chicago, Ill., July 25, 1879.
Strathlan, b s, by Strathmore, dam by Aker's Idol, at Chicago, Oct. 8, 1884.
Topsy, br m, by Walkill Chief, at Poughkeepsie, N.Y., Aug. 22, 1882.

2:22.

Bella, b m, by Rysdyke's Hambletonian, dam Lady McCann, by Jupiter, at Hartford, Conn., Sept. 2, 1875.
Blackbird, blk s, by Simpson's Blackbird, dam unknown, at Sacramento, Cal., Sept. 22, 1874.
Calmar, b g, by Bourbon Chief, dam by March's Bolivar, at Pittsburgh, Pa., Sept. 15, 1881.
Charley Hogan, b g, by Virgo Hambletonian, dam by the Wacker Horse, at Buffalo, N. Y., Aug. 6, 1884.
Commonwealth, b s, by Phil Sheridan, dam by Young St. Lawrence, at Hartford, Conn., Aug. 29, 1876.
Dame Trot, blk m, by Messenger Duroc, dam Green Mountain Maid, by Sayres' Harry Clay, at Utica, N. Y., Aug. 13, 1878.
Deucalion, b s, by Rysdyke's Hambletonian, dam Trusty, by Young Truslee, son of imp. Trustee, at Island Park, Albany, N. Y., Oct. 6, 1883.
Emma B., gr m, by Bayard, dam by Brown Harry, at Point Breeze Park, Philadelphia, Pa., Oct. 2, 1879.
George Wilkes, br s, by Rysdyke's Hambletonian, dam by Henry Clay, at Providence, R. I., Oct. 13, 1868.
Handicap, gr g, by Stephen A. Douglas, at Cleveland, O., Aug. 4, 1883.
Jerome Turner, b s, by Byerly Abdallah, dam by Pacing Abdallah, at Gainesville, Tex., Nov. 6, 1884.
Joe Brown, gr s, by Woodward's Rattler, dam by Noble's Vermont Hambletonian, at Belmont Park, Philadelphia, Pa., June 7, 1876.
Little Gypsy, b m, by Tom Hal, dam unknown, at Cleveland, O., July 27, 1877.
Mambrino Dudley, b s, by Woodford Mambrino, dam Sue Dudley, by Edwin Forrest, at Sprinfield, Mass., Sept. 1, 1881.
Mollie Morris, ch m, by a French pacing pony, dam unknown, at Buffalo, N. Y., Aug. 10, 1875.
Mystic, b g, by Reliance, dam unknown; at Prospect Park, Long Island, June 4, 1875.
Oakland Maid, gr m, by Speculation, dam Lady Vernon, at San Francisco, Cal., Nov. 4, 1876.
Silversides, gr g, pedigree unknown, at Columbus, O., July 10, 1878.
Starr King, dn g, by George M. Patchen, Jr., dam Mary Wonder, San Francisco, Cal., Aug. 12, 1882.
Wolford Z., b g, by Beaumont, dam unknown, at Utica, N. Y., Aug., 16, 1878.

2:22¼.

Bateman, b g, by Doty's Black Harry Clay, dam by Rysdyk's Hambletonian, at Hartford, Conn., Aug. 23, 1878.
Dictator, blk g, by Comet, dam unknown, at Cleveland, O., July 30, 1879.
Elmer, br g, by Gooding's Champion, dam Belle, by Rysdyk's Hambletonian, at Providence, R. I., June 18, 1884.
Fides, ch g, by General Stanton, dam by Black Bear, at Providence, Sept. 13, 1884.
Florence M., ch m, by Blue Bull, dam Fanny, untraced, at Chicago, Sept. 10, 1884.
Gladiator, b g, by Blue Bull, dam by Jim Monroe, at Pittsburgh, Pa., July 25, 1883.
Grafton, ch g, by Waxy, dam by Kavanagh's Grey Eagle, at Kalamazoo, Mich., June 30, 1875.
Hannah D., b m, by Magna Charta, dam unknown, at Hartford, Conn., Sept. 1, 1876.
Jennie Holton, b m, by Bacchus Horse, dam a pacing mare, at Utica, N. Y., Aug. 16, 1877.
Jim Early, ch g, by Fitzsimmons' Champion, dam by Pilgrim, at Chicago, Oct. 11, 1884.
King Wilkes, br s, by George Wilkes, dam Missie, by Brignoli, at Hartford, Conn., Aug. 27, 1884.
Lady Rolfe, b m, by Tom Rolfe, dam by Montezuma, at Louisville, Ky., Oct. 5, 1880.
Nellie Douglas, b m, by Stephen A. Douglas, dam untraced, at Buffalo, N. Y., Aug. 8, 1884.
Onawa blk s, by Goodwin's Hambletonian, dam Claire, by Sam Ugley, at Springfield, Mass., Sept. 7, 1882.
Reveille, b s, by New York, dam Fleet, by Kearsarge, at East Saginaw, Mich., Aug. 26, 1884.
Revenue, b s, by Smuggler, dam May Morning, by Lambert, at Utica, N. Y., July 12, 1884.
Sensation, b g, by Dixon's Ethan Allen, dam by Indian Chief, at Fleetwood Park, New York, Oct. 2, 1875.
Thorndale, b s, by Alexander's Abdallah, dam Dolly, by Mambrino Chief, at Buffalo, N. Y., Aug. 3, 1876.
Tom Rolfe, b g, by Tom Rolfe, dam Carlotta, by Fearnaught Jr., at Chicago, July 11, 1884.
Untalah, br m, by Volunteer, dam by Sayres' Harry Clay, at Utica, N. Y., Aug. 15, 1882.
Woodford Chief, b s, by Clark Chief, dam Virginia, said to be by Billy Townes, at Lexington, Ky., Oct. 13, 1877.

2:22½.

Badger Girl, gr m, by Black Flying Cloud, dam unknown, at East Saginaw, Mich., June 29, 1876.
Blackwood Jr., blk s, by Blackwood, dam Belle Sheridan, by Blood's Black Hawk, at Nashville, Tenn., May 26, 1876.
Capitola, b m, by Gilbreth Knox, at Hartford, Conn., Oct. 13, 1881.
Charles W. Woolley, b g, by Crazy Nick, dam unknown, at Buffalo, N. Y., Aug. 2, 1878.
Chestnut Hill, b s, by Strathmore, dam Polly Barber, by Bully King, at Utica, N. Y., Aug. 20, 1879.
Convoy, gr g, by Woodford Mambrino, dam Vanity Fair, by Alexander's Abdallah, at Minneapolis, Minn., Sept. 10, 1880.
Deception, gr g, pedigree unknown, at Cleveland, O., Oct 2, 1877.
Dick Moore, ch g, by Alexander's Belmont, dam Mary, by Monmouth Eclipse, at Mystic Park, Boston, Mass., Sept. 1, 1880.
Don, gr g, by Peck's Idol, dam Mary Weaver, at Hartford, Conn., Sept. 7, 1883.
Elsie Good, ch m, by Blue Bull, dam by Alexander's Abdallah, at Columbus, O., July 15, 1879.
Gibraltar, b s, by Echo, dam by Owen Pale, at Oakland, Cal., Sept. 13, 1881.
Happy Thought, b s, by Happy Medium, dam by Strader's Cassius M. Clay Jr., at Providence, R. I., June 6, 1883.

Honest Harry, rn g, by Winthrop Morrill, dam unknown, at Hartford, Conn., Aug. 28, 1877.

Jennie, b m, by Red Eagle, dam by Pataskala, at Springfield, Mass., Aug. 23, 1872.

Jewett, b g, by Allie West, dam by John Innis, son of imp. Glencoe, at Buffalo, N. Y., Aug. 1, 1882.

Joker, b g, by Parish Hambletonian, dam by Andrus' Hambletonian, at Rochester, N. Y., Aug. 10, 1875.

Little Sioux, b g, by Monitor, dam Eugenia, by Ben Roodhouse, at Council Bluffs, Ia., Sept. 2, 1881.

Mamie M., br m, by Crittenden, dam by Clark's Daniel Boone, at La Salle, Ill., July 31, 1884.

Mattie, b m, by Rysdyk's Hambletonian, dam by Young Engineer, at Buffalo, N. Y., July 31, 1878.

Neta Medium, b m, by Happy Medium, dam by Yankee Tricks, at Chicago, Ill., July 20, 1882.

Reliance, b s, by Alexander, dam by Mambrino Rattler, at Oakland, Cal., Sept. 8, 1882.

Scotland, blk g, by imp. Bonnie Scotland, dam Waterwitch, by Pilot Jr., at Cleveland, O., July 25, 1877.

Sister, ch m, by Admiral, dam Black Flora, by Black Prince, at San Jose, Cal., Oct. 3, 1884.

Sweetheart, ch f, by Sultan, dam Minnehaha, by Bald Chief, at Stockton, Cal., Sept. 30, 1881.

Tanner Boy, gr g, by Edward Everett, dam unknown, at Fleetwood Park, N. Y., May 29, 1877.

Telephone, rn g, by Wood's Hambletonian, dam by Young Andrew Jackson, at Chicago, July 12, 1884.

2.22¾.

Flora Belle, b m, by Stevens' Uwharrie, dam unknown, at Indianapolis, Ind., Oct. 4, 1872.

Palma, ch g, by Matchless, dam by the Eaton Horse, at East Saginaw, Mich., June 18, 1880.

R. P., b g, by Happy Medium, dam Sunflower, by American Star Jr., at Mystic Park, Boston, Mass., Sept. 13, 1882.

Stranger, b g, Mambrino Hambletonian, dam a pacing mare, at Cleveland, O., Aug. 4, 1883.

Young Bruno, b g, by Rysdyk's Hambletonian, dam Kate, by Bel Air, at Prospect Park, L. I., June 19, 1873.

2:23.

Alcantara, b s (4), by George Wilkes, dam Alma Mater, by Mambrino Patchen, at Cynthiana, Ky., Aug. 28, 1880.

Algath, b f (4), by Cuyler, dam Haroldine, by Harold, at Chicago, Ill., July 14, 1883.

Allen Roy, gr g, by Patchen Vernon, at Sacramento, Cal., Sept. 11, 1883.

Big Soap, b g, by Honesty, dam by Uncas, at Council Bluffs, Ia., Sept. 12, 1883.

Blue Mare, rn m, by Wood's Hambletonian, dam by Potter's Clay, at Rochester, N. Y., Aug. 10, 1877.

Bonner, ch g, by Cortlandt Star, dam Shenandoah, by son of Broken Legged Hunter, at Utica, N. Y., Aug. 21, 1875.

Bonner Boy, b g, by Gill's Vermont, dam unknown, at East Saginaw, Mich., June 19, 1874.

Clara Cleveland, ch m, by Amboy, dam Dolly Guy, by Gifford, at Chicago, Ill., July 18, 1882.

Clifton Boy, blk g, by Joe, dam a Canadian mare, at Detroit, Mich., July 6, 1878.

Commodore, b g, by Young Post Boy, dam by Edward Everett, at Sacramento, Cal., Sept. 9, 1879.

Dave Young, ch g, by S. A. Douglas, dam unknown, at Beacon Park, Boston, Mass., July 20, 1882.

Ethel, gr m, by Bine Bull, dam by Tom Crowder, at Toledo, O., July 16, 1878.

Eureka, blk g, by Gen. Grant, at Buffalo, N. Y., Aug. 4, 1881.

Fred Hooper, b g, by Royal Revenge, dam unknown, at Cleveland, O., July 30, 1874.

Hector, b g, by Snip (Victor), dam unknown, at Rochester, N. Y., Aug. 12, 1880.

Hugh McLaughlin, b s, by Aberdeen, dam Lady Ham, by Rysdyk's Hambletonian (?), at Springfield, Mass., Sept. 1, 1881.

Idol, b m, by Stephen A Douglas, dam by Long Island Black Hawk, at Rochester, N. Y., Aug. 11, 1875.

Jim Irving, b g, by Snowstorm, dam by Lear's Sir William, at Springfield, Mass., Aug. 26, 1875.

Joe Rhea, b g, dam unknown, at Lexington, Ky., Oct. 11, 1882.

John R., b g, by Peck's Idol, dam by Spaulding's Abdallah, at Louisville, Ky., Sept. 27, 1881.

Kate McCall, gr m, by Bine Bull, dam Flora Abdallah, by Alexander's Abdallah, at Pittsburgh, Pa., Sept. 14, 1881.

Katie Middleton, ch m, by Mambrino Patchen, dam Flora Abdallah, by Alexander's Abdallah, at Lexington, Ky., July 9, 1879.

Kilburn Jim, b s, by Wood's Hambletonian, dam a Morgan mare, at Buffalo, N. Y., Aug. 8, 1879.

Lady Banker, b m, by Rysdyk's Hambletonian, dam unknown, at Mystic Park, Boston, Mass., June 29, 1875.

Lady Mac, b m, by Whirlwind, dam unknown, at Mystic Park, Boston, Mass., July 25, 1877.

Lady Martin, b m, by Downing's Abdallah, dam a pacer, at Boston, Mass., July 26, 1883.

Lady Turpin, blk m, by Bell Morgan, dam Nonesuch, by Brignoli, at Rochester, N. Y., Aug. 11, 1875.

Lew Scott, b g, by Scott's Hiatoga, dam by John Richards, at Cincinnati, O., Oct., 9, 1879.

Lillian, ch m, by Almont, dam Little Shields, by King's Cadmus (?), at Louisville, Ky., Sept. 16, 1882.

Maybird, b m, by Bine Bull, dam by Pilot Jr. (?), at Pittsburgh, Pa., July 15, 1884.

Oceana Chief, ch s, by Nero, dam unknown, at East Saginaw, Mich., June 17, 1879.

Proctor, b g, by Harris' Mambrino Chief Jr., dam by Vermont Hambletonian, at Rochester, N. Y., Aug. 10, 1876.

Scott's Chief, b g, by Fisher's Edwin Forrest, dam Lady Rice, by Whitehall, at East Saginaw, Mich., June 19, 1879.

Thomas Jefferson, blk s, by Toronto Chief, dam Gypsy Queen, by Wagner (?), at Prospect Park, L. I., June 2, 1875.

Tom Rogers, blk s, by George Wilkes, dam Nelly, untraced, at Newark, O., June 27, 1884.

Trampoline, ch m, by Tramp, dam Yellow Bird, by Green's Bashaw, at Point Breeze Park, Philadelphia, Pa., Oct. 1, 1878.

Unknown, ch g, by Peacemaker, son of Bourbon, dam Belle of Hartford's dam, at Springfield, Mass., Aug. 27, 1875.

Victor, br s, by Gen. Knox, at Hartford, Conn., June 29, 1881.

Volney, b g, by Volunteer, dam Dolly Martin, by Defiance, at Sacramento, Cal., Sept. 13, 1879.

Wildair, b g, by Sherman Morgan Jr., dam unknown, at Rochester, N. Y., Aug. 6, 1878.

2.23¼.

Alta, br m, by Almont, dam Lady, by Bourbon Chief, at Louisville, Ky., May 9, 1883.

Argonaut, br g, by Wood's Hambletonian, dam the dam of Nancy Hackett, 2:20, at Chicago, July 23, 1881.

Belle Hamlin, b m (5), by Hamlin's Almont Jr., dam Toy, by Hamlin's Patchen, at Buffalo, N. Y., Aug. 9, 1884.

Blackwood Prince, blk s, by Blackwood, dam Voluntary, by Volunteer, at Hartford, Conn., June 29, 1884.

Dan Voorhees, ch s, by Gen. McClellan, dam unknown, at San Francisco, Cal., June 24, 1876.

D. C. S., b g, by Joe Elmo, dam by Sir Wallace, at Gainsville, Tex., Nov. 6, 1884

Don Carlos, b s (4), by Cuyler Clay, dam Lady Abdallah, by Alexander's Abdallah, at Chicago, Ill., July 11, 1884.

Echora, br m, by Echo, dam by Jack Hawkins, at Stockton, Cal., Sept. 20, 1882.

Fearnaught, ch s, by Young Morrill, dam Jennie, by the Steve French Horse, at Buffalo, N. Y., July 29, 1868.

Florence, ch m, by Highland Grey, dam by Adams' Rattler, at Belmont Park, Philadelphia, Pa., Oct. 3, 1882.
Frank Reeves, b g, by Skedaddle, dam by Dallas, at Hartford, Conn., Nov. 1, 1876.
General Butler, blk g, by Smith Burr, dam unknown, at Fashion Course, L. I., June 21, 1863.
Goldfinder, ch s, by John Lambert, at Mystic Park, Boston, Mass., July 27, 1882.
Independence, b s, by Young Hindoo, dam Fanny Fern, by Tom Howard, at Poughkeepsie, N. Y., Aug. 23, 1882.
Lady Snell, b m, by Godfrey's Patchen, dam Lady Stevens, by Biggart's Rattler, at Hartford, Conn., Sept. 1, 1875.
Lee W., b g, by Bourbon Blue, dam Mayfly, untraced, at Chicago, Sept. 13, 1884.
Leontine, br m, by Hamlet, dam Bet, by Clark Chief, at Erie, Pa., June 28, 1882.
Lucrece, b m, by Robert Whaley, dam unknown, at Belmont Park, Oct. 3, 1882.
Madeline, b m, by Rysdyk's Hambletonian, dam Nancy Whitman (Robert McGregor's dam), by Seely's American Star, at Hartford, Conn., June 14, 1883.
Mambrino Sparkle, b m, by Fisk's Mambrino Chief, dam by Sparkle, at Kalamazoo, Mich., June 11, 1884.
Nelly L., b m (5), by George Wilkes, dam Lady Oakley, by Gill's Vermont, at Rochester, N. Y., Aug. 15, 1884.
Nerea, ch m, by John Nelson, dam by General Taylor, at Rochester, N. Y., May, 14, 1875.
Phil. b g, pedigree unknown, at Utica, N. Y., Aug. 15, 1878.
Post Boy, ch s, by Magic, dam Ned, by Berkley's Edwin Forrest, at Lexington, Ky., Oct. 16, 1879.
Prospect Maid, br m, by George Wilkes, dam Neilson, by Mambrino Pilot, at Utica, N. Y., Oct. 4, 1882.
Robert Wilkes, blk g, by Calkin's Horse, dam Kittie, by a son of Greyhound, at Mystic Park, July 22, 1881.
Sciola, b m, by Tuckahoe Iowa, dam unknown, at Lexington, Ky., Oct. 14, 1879.
St. Dennis, b g, by Blue Bull, dam by Shawhan's Tom Hal, at Chicago, July 12, 1884.
Tolu Maid (Nettie C.), br m, by son of Red Bird (pacer), dam by Wells' Yellow Jacket, at Lexington, Ky., Oct. 3, 1880.
Trio, b m, by Volunteer, dam Lady Scars, by Seely's American Star, at Buffalo, N. Y., Aug. 2, 1876.
W. H. Allen, b s, by Volunteer, dam Peggy Slender, at Mystic Park, Boston, Mass., June 18, 1882.
Wizz, b g, by Roscoe, dam Lady Fulton, by Stubtail, at Hartford, Conn., July 4, 1881.
York State, b g, by Gooding's Champion, dam unknown, at Cleveland, O., July 28, 1875.

2:23¼.

Annie Collins, b m, by Edwin Forrest, dam unknown, at Hartford, Conn., Aug. 29, 1876.
B. B., blk g, by Milliman's Bellfounder, dam by Waite's Marshall, at San Francisco, Cal., Aug 8, 1884.
Belle Wilson, ch m, by Blue Bull, dam by St. Lawrence, at East Saginaw, Mich, June 20, 1882.
Big Fellow, b g, by Edward Everett, dam by Henry Clay, at Island Park, Albany, N. Y., June 30, 1883.
Blanche, blk m, by Young Morrill, dam unknown, at Prospect Park, Long Island, Oct 4, 1875.
Ella Doe, ch m, by Daniel Lambert, dam by Cook's Columbus, at Beacon Park, Boston, Mass., July 25, 1883.
Fashion, b m, by Clark's Mohawk Jr., dam by Surprise, at Cleveland, O., Sept. 6, 1881.
George M. Patchen, b s, by Cassius M. Clay, dam by son of imp. Trustee, at Union Course, Long Island, Aug. 2, 1860.
Gloster, b g, by Highland Boy, dam Dolly, by Black Prince, at Hartford, Conn., Aug. 29, 1879.
Gray Cloud, gr s, by Blue Grass (son of Rysdyk's Hambletonian), dam a pacing mare, at East Saginaw, Mich., June 18, 1880.
Homewood, ch s, by Hambletonian Tranby, dam by Fred Pierson, at Cleveland, O., Sept. 26, 1884.
Jim, rn g, by Daniel Lambert, dam a pacing mare, at Mystic Park, Boston, Mass., Sept. 7, 1881.
John D., b g, by Messenger Duroc, dam by Shaw's Kemble Jackson, at Providence, July 23, 1884.
Keno, b g, by Magic, dam by Black Jeff, grandson of Gen. Taylor, at Maysville, Ky., May 19, 1882.
Knox Boy, br s, by Gen. Knox, dam by Lewiston Boy, at Mystic Park, Boston, Mass., June 16, 1880.
Lady Voorhees, ch m, by Tuckahoe, dam unknown, at Utica, N. Y., Aug. 16, 1878.
Lizzie H., ch m, by Trouble, dam Lizzie, by Paragon Morgan, at East Saginaw, Mich., June 16, 1880.
Lizzie O'Brien, ch m, pedigree unknown, at Albany, N. Y., Oct. 6, 1883.
Lona Guffin, b m, by Blue Bull, at Springfied, Mass.,
Longtellow Whip, blk s, by Captain, dam untraced, at New Ross, Ind., Aug. 17, 1883. (Bar record.)
Marion, ch g, by Tom Crowder, dam unknown, at Utica, N. Y., Aug. 16, 1876.
Mary Russell, grm, by Joe Brown, dam by Milliman's Bellfounder, at Hartford, Conn., Oct. 17, 1874.
Maudie, b m, by Nonpareil, dam untraced, at Pittsburgh, July 15, 1884.
Nancy, b m, by Daniel Lambert, dam May Day, by Miles Standish, at Beacon Park, Boston, Mass., Sept. 25, 1880.
Neva, b m, by Strader's Hambletonian, at Chicago, Ill., Oct. 11, 1883.
Nonpareil, ch m, by Gooding's Champion, dam Minnie, by King's Champion, at Columbus, O., May 24, 1882.
Pearl, b m, by Regulus, dam untraced, at Buffalo, N. Y., Aug 6, 1884.
Poscora Hayward, gr s, by Billy Hayward, dam by Young Poscora, at Sacramento, Cal., Oct 10, 1883.
R. F. C., b g, by Darlbay, dam by John Dillard, at Providence, June 19, 1884.
Rhode Island, br s, by Whitehall, dam by Nigger Baby, at Fashion Course, Long Island, October 27, 1868.
Shepherd Boy, gr g, by Woodward's Ethan Allen, dam unknown, at Cleveland, O., Oct. 3, 1877.
Sherman, br s, by George Wilkes, dam Lady Belmont, by Belmont, at Rochester, N. Y., Sept. 20, 1883.
St. James, b g, by Gooding's Champion, dam by an Indian pony, at Buffalo, N. Y., Aug. 8, 1873.
Tom Cameron, gr g, by Scott's Hiatoga, dam by Pascalette, at Buffalo, N. Y., Aug. 6, 1884.
Toronto Chief, br s, by Toronto Chief, at Belmont Park, Philadelphia, Pa., Nov. 1, 1882.

2:23¾.

Abe Edginton, gr g, by Stockbridge Chief, dam by California Belmont, at San Jose, Cal., Oct. 1, 1878.
Argonaut, b s, by Fearnaught, dam unknown, at Hartford, Conn., June 24, 1880.
Ashley, ch g, by Pinmas, dam by George, at Sacramento, Cal., Sept 27, 1881.
Billy Barr, ch g, by Ethan Allen, dam unknown, at Mystic Park, Boston, Mass., June 16, 1870.
Billy Ray, rn g, by Wood's Hambletonian, dam unknown, at Point Breeze Park, Philadelphia, Pa., May 24, 1876.
Damon, br s, by Ames' Bogus, dam by Grey Eclipse, at Cleveland, O., July 25, 1877.
Durango, blk s, by Cassius M. Clay Jr., dam Mattie West, by Almont, at Chicago, Ill., Oct. 16, 1883.
Foxie V., ch m, by Kiog Herod, at Janesville, Wis., June 8, 1883.
Frank J., du g, pedigree unknown, at Hartford, Conn., Sept. 1, 1885.
Harry Clay, blk g, by Strader's C. M. Clay, dam a pacer, at Cleveland, O., July 26, 1877.
Hersey, b s, by Macedonian, dam Lady Fleet, by Reed's Young Jupiter, at Beacon Park, Boston, Mass., July 25, 1883.
Kate Taylor, b m, by Aberdeen, dam Emeline, by Henry B. Patchen, at Cleveland, O., July 26, 1882.
Major Lord, du g, by Edward Everett, dam unknown, at Hartford, Conn., Aug. 29, 1879.

Nobby, br g, by Nobby, dam by May's Sir Wallace, at Cleveland, O., Aug. 1, 1884.

2:24.

Anteo, b s (5), by Electioneer, dam Columbine, by A. W. Richmond, at San Francisco, Nov. 8, 1884.

Breeze, b g, by Rysdyk's Hambletonian, dam Kate, by Bel Air, at Utica, N. Y., Aug. 15, 1876.

Brother Jonathan, b g, by the Potter Horse, dam by Beatie's Norman, at Chicago, Ill., Oct. 2, 1873.

Champion Jr., br s, by Mambrino Champion, son of Eureka, dam the Wickson Mare, by Eureka, at Poughkeepsie, N Y., Aug. 21, 1877.

Crown Point, ch s, by Speculation, dam Young Martha, by George M. Patchen Jr., at San Francisco, Cal., Aug. 5, 1882.

Dan Bryant, ch g, by Plow Boy, son of Excelsior, dam by Cone's Bacchus, at Utica, N Y., Aug. 15, 1877.

Defiance, blk s, by Chieftain, son of Hiatoga, dam unknown, at San Francisco, Cal., Dec. 11, 1875.

Del Sur, blk s, by The Moor, dam Gretchen, by Mambrino Pilot, at Sacramento, Cal., Sept. 24, 1881.

Dr. Lewis, ch g, by Marshall Chief, dam unknown, at Newark, O., Oct. 16, 1878.

Empress, ch m, by Whipple's Hambletonian, dam Kitty Tricks, at San Francisco, Cal., Oct. 15, 1881.

Frank Wood, b g, by Volunteer, dam by a son of American Star, at Roehester, N. Y., Aug. 13, 1874.

George B. Daniels, ch g, by King's Champion, dam by Greyhound, at Prospect Park, L. I., Oct. 29, 1874.

George M., br g, by Westfield Boy, at Poughkeepsie, N. Y., June 28, 1882.

George L., b g, by Daniel Lambert (?), dam Brown Fanny, by Young Black Hawk, at Mystic Park, Sept. 17, 1884.

G. T. Pilot, dn g, pedigree unknown, at Chicago, Ill., Oct. 11, 1878.

Glide, ch s, by Perkins' Morrill, dam Sleepy, by North Morrill, at Suffolk Park, Philadelphia, Pa., May 14, 1879.

Grey Salem, gr g, pedigree unknown, at Chicago, Ill., July 24, 1879.

Harry Gilbert, ch g, by Jupiter, dam by American Star, at Prospect Park, L. I., June 11, 1879.

Hotspur, b g, by Ethan Allen, dam by Abdallab, at Mystic Park, Boston, Mass., Aug. 20, 1869.

Ina G., b m, by Blue Bull, dam a Morgan mare, at Maysville, Ky., May 19, 1882.

James Howell, Jr., br g, by Rysdyke's Hambletonian, dam Jessie Sayre, by Harry Clay, at Springfield, Mass., Aug. 20, 1874.

Jessie Hayes, b m, by Ned Forrest, son of Dave Hill, dam unknown, at East Saginaw, Mich., June 17, 1879.

John Morgan, ch g, by Pilot, Jr., dam by Medoc. at Fashion Course, L. I., June 15, 1864.

John W. Conley, b s, by Tom Wonder, dam by Abdallah, at Fleetwood Park, N. Y., May 28, 1873.

Joseph A., b g, by Sackett's Hambletonian, dam unknown, at Poughkeepsie, N.Y., Aug. 21, 1877.

Judge Hawes, b g, by Jim Monroe, dam Laura, by American Clay, at Maysville, Ky., Sept 22, 1882

Kitty Vin., b m, by Walker's Morrill, dam by Magna Charter, at Chicago, Oct. 11, 1883.

Kirkwood, br s, by Green's Bashaw, dam by Green Mountain Morgan, at Buffalo, Aug. 12, 1869.

Lady Star (Capitola), b m, by Sir Henry, dam unknown, at Freeport, Ill., Oct. 12, 1876.

Magdallah, ch m, by Primus, dam Maud, by Mambrino Rattler, at Stockton, Cal., Sept. 19, 1879.

Mambrino Kate, gr m, by Mambrino Patchen, dam by State of Maine, at Detroit, Mich., July 6, 1878.

May Howard, gr m, by Paddy Magee, son of Gen. Taylor, dam the McCormick Mare, breeding unknown, at San Francisco, Cal., Aug. 19, 1876.

McLeod, b g, by Mambrino Blitzen, dam by John Dillard, at Lexington, Ky., Oct. 13, 1884.

Middlesex, ch g, by Seneca Chief, dam Nellie Litchfield, by Greyhound, at Hartford, Conn., Aug. 27, 1879.

Neome, b g, by Post-Boy Frank, dam Fannie Snyder, at Earlville, Ill., Aug. 22, 1878.

Nettie Burlew, b m, by King's Champion, dam Nipper, by Geo. M. Patchen, at Mystic Park, Boston, Mass., Sept. 12, 1876.

Nil Desperandum, b s, by Alexander's Belmont, dam Lady McKinney, at Prospect Park, L. I., Sept. 20, 1878.

Orient, b g, by Smith's Patchen, dam Kate A., at Hartford, Conn., Sept. 3, 1875.

Sadie Bell, ch m, by Captain West, dam Mollie, by Sebastopol, at Columbus, O., July 11, 1878.

Sooner, b g, by Hambletonian Rattler, dam by Cayuga Chief, at Providence, R. I., Sept. 4, 1878.

Tommy Dodd, rn g, by Alexander, dam by Mystery, at Sacramento, Cal., Sept. 21, 1880.

Tommy Gates, b g, by The Moor, dam by Little John, at Sacramento, Cal., Sept. 9, 1879.

Westmont, b s, by Col. West, dam Fanny, by Mambrino Sherman, at Des Moines, Ia., Sept. 2, 1884.

Whirlwind, b g, by Zileadie Golddust, dam untraced, at Hartford, Conn., June 12, 1884.

Wild Lily, b m, by Daniel Lambert, dam a Morgan mare, at Providence, R. I., Sept. 20, 1877.

2:24¼.

Abdallah Boy, b s, by Abdallah Messenger, dam Motto, at Columbus, O., June 28, 1881.

Amy R, by Holamer's Winnebago, dam Daisy Dean, by Black Jack, at Buffalo, N. Y., Aug. 1, 1876.

Belle Oakley, ch m, by Garibaldi, at Suffolk Park, May 12, 1881.

Belle Wilson, b m, by Membrino Bruce, at New Ross, Ind., Aug. 17, 1883.

Big John, b g, by Pilot Duroc, at Ionia, Mich., July 1, 1881.

Big Lize, b m, at San Francisco, Cal., Aug. 11, 1883.

Black Frank, blk g, by Wild Wagoner, dam unknown, at Point Breeze Park, Philadelphia, Pa., May 30, 1878.

Butterscotch, b g, by Panic, dam Maid of the Mist, by Cummings' Davy Crockett, at Chicago, Oct. 4, 1884.

Calamus, b m, by Swigert, dam Sorrel Fanny, by Richards' Bellfounder, at Minneapolis, Minn., Sept. 8, 1880.

Carrie, b m, by Volunteer dam by American Star, at Buffalo, N. Y., Aug 4, 1876.

Dick Taylor, gr g, by Bob Didlake, dam by Star Davis at Lexington, Ky., Oct. 15, 1877.

Draco Prince, blk s, by Draco, dam by Vermont Black Hawk, at Mystic Park, Boston, Mass., Oct. 3, 1871.

Flora F., b m, by Clear Grit, dam Lady Blanche, by Mazeppa, at Buffalo, N. Y., Aug. 2, 1881.

Fred Douglass, blk g, by Black Frank, dam Boggy, at Chicago, Ill., Sept. 19, 1881.

George A., b g, by Daniel Lambert, dam Pacing Kate, untraced, at Beacon Park, October 8, 1884.

George O., b g, by Hambletonian Chief, dam by Gen. Knox, at Beacon Park, Oct. 17, 1884.

Gypsy, br m, by Winthrop Morrill, Jr., at Mystic Park Boston, Mass., July 25, 1882.

Jimmy Stewart, b g, by Daniel Lambert, dam a Black Hawk mare, at Springfield, Mass., Aug. 31, 1881.

John Hall, b g, by Daniel Lambert, dam unknown, at Lyons, N. Y., June 16, 1880

Lady Foxie, ch m, by Daniel Lambert, dam a Black Hawk mare, at Providence, R. I., Oct. 20, 1880.

Lucy Fleming, ch m, by Peavine, dam by Brinker's Drennon, at Utica, N. Y., Aug. 22, 1879.

Major Allen, ch g, by Young Ethan Allen, dam unknown, at Buffalo, N. Y., Aug. 9, 1871.

Malvina, b m, by Fearnaught Spy, dam a Morgan mare, at Des Moines, Ia., Sept. 3, 1883.

Monarch Rule b m, by Strawn's Monarch, dam Young Bob Rule, by Old St. Lawrence, at Cleveland, O., July 30, 1879.

Observer, ch g, by Holmes' Horse, dam unknown, at Earlville, Ill., Aug. 27, 1875.

Vanity Fair, br g, by Albion, dam unknown, at New York, N. Y., May 21, 1875.

Will Benham, b g, by Brit Clay, dam unknown, at Sherman, Texas, April 18, 1884.

Windsor M., b g, by Windsor, dam unknown, at Mystic Park, Sept. 20, 1884.
Winnie Wick, blk m, by Swigert, dam Lady Bell, by Richard's Bellfounder, at Beacon Park, July 17, 1884.

2:24½.

Alice Stoner, b m, by Strathmore, dam by Berkeley's Edwin Forrest, at Lexington, Ky., Aug. 29, 1872
Atlantic, blk s, by Almont, dam Isabel Clay, by Kentucky Clay, at East Saginaw, Mich., Aug. 29, 1884.
Barbara Patchen, b m, by Peck's Idol, dam by George M. Patchen, at Rochester, N. Y., Aug. 11, 1882.
Belle H., b m, by Grey Belmont, dam by Magna Charta, at Sacramento, Cal., Sept. 13, 1879.
Breeze Medium, b m, by Happy Medium, dam Nct, by Prospect Park, Long Island, June 1, 1880.
Brown Dick, br g, by Son of American Star, dam unknown, at East Saginaw, Mich., June 22, 1875.
California Damsel, ch m, by Nonpariel, dam unknown, at Fashion Course, Long Island, Sept. 16, 1863.
Carbolic, b g, by Logan, dam by Bashaw Jr., at Prospect Park, Long Island, June 1, 1880.
Cora Belmont, gr m, by Belmont, dam Miss Russell, by Pilot Jr., at Hartford, Conn., June 22, 1882.
Corisande, b m, by Iowa Chief, dam unknown, at Sacramento, Cal., Sept. 16, 1878.
F. D., b g, by Emery Fearnaught, dam untraced, at Mystic Park, Sept. 19, 1884.
Flora B. (Dream), b m, by Curtis' Hambletonian, dam Nicola, by Reveille, at Detroit, Mich., June 28, 1884.
Flora P., ch m, by Mambrino Sample, dam Dolly Varden, untraced, at Council Bluffs, Ia., June 28, 1884.
Fugue, b f (4), by King Rene, dam Fuga, by George Wilkes, at Lexington, Ky., Aug. 26, 1884.
General Hancock, b g, by Lightning, dam Miss Jones, by Perkins' Morrill, at Minneapolis, Sept. 5, 1884.
Gentle Frank, b g, by Arnold's Tuckahoe, at Quincy, Ill., Sept. 3, 1880.
George, by Parrish's Hambletonian, dam unknown, at Prospect Park, L. I., June 2, 1874.
George, blk g, by Mambrino Patchen, dam unknown, at Columbus, O., July 1, 1880.
Harry Velox, b g, by Velox, dam Ariosa, untraced, at Council Bluffs, Ia., June 24, 1884.
Herod, blk s, by King Herod, dam Hilliard, by Green Mountain Boy, at Rochester, Minn., Sept. 6, 1884.
Hylas, ch s, by Alcalde, dam by Pilot Jr., at East Saginaw, Mich., June 29, 1876.
Joe Davis, br g, by Dr. Herr, dam by Mambrino Pilot Jr., at Marshalltown, Ia., June 19, 1884.
Josephine S., blk m, by Guy Miller Jr, dam Swarts, by Ethan Allen, at New York, N. Y., June 20, 1884.
Kate Hall, ch m, by Blue Bull, dam by Young Proud America, at Buffalo, N. Y., Aug. 7, 1879.
Lady Alert, ch m, by Mambrino Lance, dam by Honest Tom, at Island Park, June 27, 1884
Laura Williams, gr m, by Holabird's Ethan Allen, dam the Stone mare, by the Bullock Horse, at Beacon Park, Boston, Mass. May 15, 1877.
Lelan H., b f (4), by Homer, dam by Sentinel, at Lexington, Ky., Oct. 16, 1884.
Loafer, rn g, by Copperbottom Horse, dam unknown, at Freeport, Ill., May 30, 1878.
Magenta, b m, by Woodford Mambrino, dam Madge, by Alexander's Abdallah, at Lexington, Ky., Oct. 9, 1877.
Mambrinette, b m, by Mambrino Gift, dam Lady Alice, by Mambrino Chorister, at Cleveland, O., Sept. 25, 1884.
Monarch Jr., rn s, by Strawn's Monarch, dam unknown, at Lexington, Ky., Oct. 20, 1876.
Myron Perry, b g, by Young Columbus, dam by Hopkins' Abdallah, at Baltimore, Md., June 3, 1871.
Oliver K., b g (4), by King Wilkes, dam Bessie Turner, by Virginius, at Cleveland, O., Sept. 26, 1884.
Paul Hacke, gr g, by Strathmore, dam by Pilot Jr. (?), at Pittsburgh, Pa., July 16, 1884.
Pilot Temple, b s, by Pilot Jr., dam by Spotted Arabian, at St. Louis, Mo., May 13, 1871.
Planter, ch g, by Red Bird, dam unknown, at Poughkeepsie, N. Y., Aug. 23, 1876.
Prince, b g, by Long Island Black Hawk, dam unknown, at Fashion Course, L. I., Sept. 16, 1863.
Prince Middleton, b g, by Bay Middleton, dam by Night Hawk (?), at Waco, Tex., Nov. 21, 1884.
Pritchard, ch g, by a son of Pulaski, dam untraced, at Council Bluffs, Ia., June, 28, 1884.
Randall, ch g, by Rattler, dam unknown, at Omaha, Neb., Oct. 1, 1874.
Sea Foam, gr m, by Young Columbus, dam unknown, at Point Breeze Park, Philadelphia, Pa., May 26, 1875.
Sir Walter, ch s, by Aberdeen, dam Lady Winfield, by Edward Everett, at Lexington, Ky., Oct. 16, 1884.
Sleepy John, pedigree unknown, at Springfield, Mass., Aug. 20, 1872.
Snowall, ch g, by Frank Pierce 3d, dam by Moscow, at Washington, D. C., Oct. 9, 1880.
Tump Winston, ch g, by Primus, dam untraced, at Santa Cruz, Cal., Aug. 16, 1884.
Valley Boy, b g, by Aberdeen, dam by Plow Boy, at Albany N. Y., Sept. 27, 1882.
Wilbur F., blk g, by the Hinsdale Horse, dam unknown, at Hartford, Conn., Aug. 26, 1880.
Wilkes Boy, b c (4), by George Wilkes, dam Betty Brown, by Mambrino Patchen, at Lexington, Ky., Aug. 26, 1884.
Windsor (Despatch), rn g, by Lewiston Boy, dam unknown, at St. Louis, Mo., Oct. 3, 1879.

2:24¾.

Albert, blk g, pedigree unknown, at Buffalo, N. Y., Aug. 7, 1875.
Almonarch, b s, by Almont, dam Hi, by Asteroid, at Buffalo, N. Y., Aug. 10, 1883.
Bashaw, Jr., ch s, by Green's Bashaw, dam by Green Mountain Morgan, at Detroit, Mich., Aug. 27, 1868.
Blondin, ch m, by George Wilkes, dam Flaxy, by Kentucky Clay, at Lexington, Ky., Oct. 15, 1879.
Chicago, br g, by Ole Bull, dam by American Eclipse, at Chicago, Ill., June 9, 1868.
Col. Davies, b g, pedigree unknown, at Utica, N. Y., Aug. 16, 1878.
Dan Donaldson, ch g, by imp. Bonnie Scotland (?), at Chicago, Ill., July 23, 1881.
Edwin A. (Sentinel), b g, by Gooding's Champion, at Erie, Pa., June 29, 1881.
Ella Wright, b m, by Trojan, dam by Vaughn's Hercules, at Chicago, Ill., July 22, 1874.
Elwood Medium, b s, by Happy Medium, dam Blanche, by Hopkins' Abdallah, at Beacon Park, Boston, Mass., Sept. 16, 1881.
Galatea, b m, by Fearnaught, dam Grand Duchess, by Hanley's Hiatoga, at Narraganscett Park, Cranston, R. I., Aug. 1, 1881.
Gray Chief, gr g, by Louis Napoleon, dam unknown, at Belmont Park, Philadelphia, Pa., May 28, 1880.
Hardwood, b s, by Blackwood Jr., dam by Columbus, at Chicago, Ill., July 18, 1882.
Jewell, b g, by Buckingham, dam Kate Coe, by Rhode Island, at Providence, R. I., July 24, 1884.
Lady Mills, b m, by Chosroes, dam by Black Jack, at Buffalo, N. Y., Aug. 1, 1873.
Louis D., b g, by King William, at Sacramento, Cal., Sept. 11, 1882.
May Thorne, b m, by Thorndale, dam by Rich's Jupiter, at Beacon Park, Boston, Mass., Sept. 19, 1882.
Silas Rich, ch g, by imp. Young Priam, dam unknown, at Chicago, Ill., July 19, 1868.
Smuggler's Daughter, b m, by Smuggler, dam Molly D., by Mambrino Chief, at Mystic Park, Aug. 11, 1884.

2:25.

Æmulus, br s, by Mambrino Pilot, dam by Shoreham Black Hawk, at Utica, N. Y., Aug. 22, 1879.
Allie West, blk s, by Almont, dam by Mambrino Chief, at Cynthiana, Ky., Sept. 24, 1875.

Ambassador, blk s, by George Wilkes, dam Lady Carr, by American Clay, at Columbus, C., Sept. 3, 1884.

Anodyne, ch g, by Ross Cole, dam by Young Hogarth, at Beacon Park, Boston, Mass., Oct. 19, 1877.

Aulinda, b m, by Woodward's Ethan Allen, dam by Red Bird (?), at Springfield, Mass., Sept. 2, 1881.

Barney Kelley, br g, by Holland's Ethan Allen, dam a Morgan mare, at Providence, R. I., Nov. 1, 1877.

Barrett (Prairie Chief), b s, by Chester Chief, dam by Houston's Clay, at Springfield, Mass., Sept. 7, 1882.

Betsy Ann, ch m, by Hoagland Horse, dam by Marshall Chief, at Milwaukee, Wis., June 26, 1884.

Bill Thunder, b g, by Robin Clay, dam by Alexander's Abdallah, at Lexington, Ky., Oct. 19, 1876.

Bonnie, b f (4), by General Benton, dam America, by Rysdyk's Hambletonian, at San Francisco, Cal., Sept. 1, 1883.

Charles Henson, gr g, pedigree unknown, at Buffalo, N. Y., Aug. 6, 1879.

Charlie Mac, ch g, by Holabird's Ethan Allen, dam the dam of Laura Williams, at Mystic Park, Boston, Mass., June 11, 1877.

Chicago Maid, b m, by the Holmes Horse, dam Illinois Maid, by Price's Hambletonian, at Chicago, Ill., Oct. 11, 1878.

Clay, blk s, by Electioneer, dam Maid of Clay, by Henry Clay, at San Francisco, Cal., Nov. 1, 1884.

Commodore Vanderbilt, b s, by Young Columbus, dam unknown, at Union Course, Long Island, June 11, 1866.

Crown Prince, wh g, by Logan's Messenger, dam by Warrior, at New York, N. Y., Sept. 18, 1873.

Cyclone, br s, by Caliban, dam Gamlet by Hamlet, at Lexington, Ky., Aug. 28, 1883.

David C., b g, by David Hill, at Chicago, Ill., Sept. 19, 1881.

Douglas, gr g, by Washington, dam unknown, at Mystic Park, Boston, Mass., June 6, 1882.

Ella Earl, b m, by Almont, dam by John C. Breckenridge, at Chicago, Ill., July 23, 1879.

Elsie Groff, b m, by Danville, dam unknown, at Cleveland, O., Sept. 6, 1881.

Eva, b m (5), by Sultan, dam Minnehaha, by Bald Chief, at Chicago, July 7, 1884.

Everett Ray, b g, by Edward Everett, dam unknown, at Springfield, Mass., Aug. 19, 1874.

Frank F., b g, by Emperor William, at Narragansett Park, Oct. 25, 1881.

Frank Munson, ch g, by Paragon, dam by Parrish's Colonel, at Mystic Park, Boston, Mass., Sept. 10, 1879.

George H., b g, by Godfrey's Patchen, dam unknown, at Mystic Park, Boston, Mass., Oct. 8, 1879.

Glanis, gr g, by Godfrey's Patchen, at Springfield, Mass, Aug. 30, 1883.

Gold Note, b g, by Contraband, dam by Jack Hayes, at San Francisco, Cal., Nov. 16, 1880.

Harry Parker, blk g, by Signal, dam by Hinsdale Horse, at Mystic Park, June 14, 1884.

Hiram Woodruff, blk g, by Phil Sheridan, dam by Grey Eagle, at Providence, R. I., Nov. 1, 1877.

Joe Ripley, b g, by Sawin's Hambletonian, dam by Black Hawk Morgan, at Mystic Park, Boston, Mass., Oct. 18, 1877.

John Hall, blk g, by General Howard, dam unknown, at Milwaukee, Wis., June 4, 1878.

John Taylor, b g, by Shaw's St. Lawrence, dam unknown, at New York, Oct. 25, 1875.

John W. Hall, ch g, by Independence, dam unknown, at Utica, N. Y., Aug. 21, 1875.

Jubilee Lambert, br s, by Daniel Lambert, dam by Sherman Black Hawk, at Beacon Park, Boston, Mass., June 22, 1875.

Lady Lockwood, b m, by Neaves' C. M. Clay, Jr., dam by Alexander W., at Union Course, Long Island, Sept. 18, 1875.

Lady Majolica, b m, by Dictator, dam by Brown Chief, at New York, N. Y., Sept. 10, 1884.

Lady Moore, b m, by Peacemaker, dam by Westchester, at Hartford, Conn., Oct. 13, 1881.

Lady Thorne, b m, by Daribay, dam Sally Messenger, by Starlight, at Chicago, Ill., July 23, 1881.

Lancet, blk g, by Hill's Black Hawk, dam Old Squaw, at Hartford, Conn., Oct. 10, 1857.

Largesse, br m, by Scott's Thomas, dam by Woful, son of Long Island Black Hawk, at Pittsburgh, Pa., July 12, 1882.

Lark (Charley B), b s, by King's Champion, dam by Nimrod, at Fleetwood Park, New York, Oct. 30, 1879.

Little Mary, ch m, by Billy Mustapha, dam unknown, at Point Breeze Park, Philadelphia, Pa., June 15, 1876.

Modoc, ch g, by Tornado Jr., dam by Powers' Morgan at Davenport, Ia., June 18, 1878.

Modoc, gr g, at Beacon Park, Boston, Mass., June 13, 1881.

Mohawk Jr., b s, by Mohawk, dam by Robinson's Bellfounder, at Cleveland, O., July 20, 1872.

Ned Wallace, b s, by Taggart's Abdallah, dam unknown, at Beacon Park, Boston, Mass., June 15, 1876.

Nellie Butts, b m, by Millman's Bellfounder, dam by J. W. Foster, at San Francisco, Nov. 1, 1884.

Nellie Irwin, b m, by Middleton, dam by Bay Abdallah, at Rochester, N. Y., Aug. 14, 1874.

Ottawa Chief, b s, by Byron, dam by Schamyll, at Chicago, Ill., Oct. 11, 1883.

Pat Hunt, ch g, by Tecumseh, dam by St. Clair (waggon), at San Francisco, Cal., Dec. 15, 1877.

Queechy Maid, b m, by Ballard's Clay, dam by the Morse Horse, at Mystic Park, Boston, Mass., Oct. 7, 1879.

Result, b s, by Jupiter Abdallah, dam by Rysdyk's Hambletonian, at Poughkeepsie, N. Y., Sept. 7, 1878.

Revenge, blk g, by Patchen Chief, Jr., dam untraced, at Hartford, Conn., June 13, 1884.

Ripon Boy, b s, by Ira Allen, dam by Wiley's Blucher, at Joliet, Ill., July 11, 1873.

Robert B. Thomas, ch g, by Prince Allen, dam unknown, at Mystic Park, Boston, Mass., Oct. 8, 1879.

Rolla Golddust, br g, by Golddust, dam unknown, at St. Louis, Mo., Oct. 18, 1867.

Stranger, ch g, by Alta, at Cynthiana, Ky., Aug. 24, 1883.

St. Louis, b g, by Colossus Mambrino, dam by Mambrino Patchen, at Cleveland, O., Sept. 6, 1882.

Tom Hendricks, b g, by Tom Rolfe, at Cleveland, O., July 25, 1881.

Tom Keeler, b g, by Jersey Star, dam unknown, at Detroit, Mich., July 5, 1877.

Valley Chief, gr s, by Phil Sheridan, dam unknown, at Hartford, Conn., June 24, 1880.

Vulcan, blk g, by Green Mountain Banner, dam by Vermont Hambletonian, at Mystic Park, Oct. 18, 1877.

Willis Woods, b g, by Rescue, dam Dolly Varden, at Maysville, Ky., May 17, 1883.

FASTEST RUNNING TIME ON RECORD.

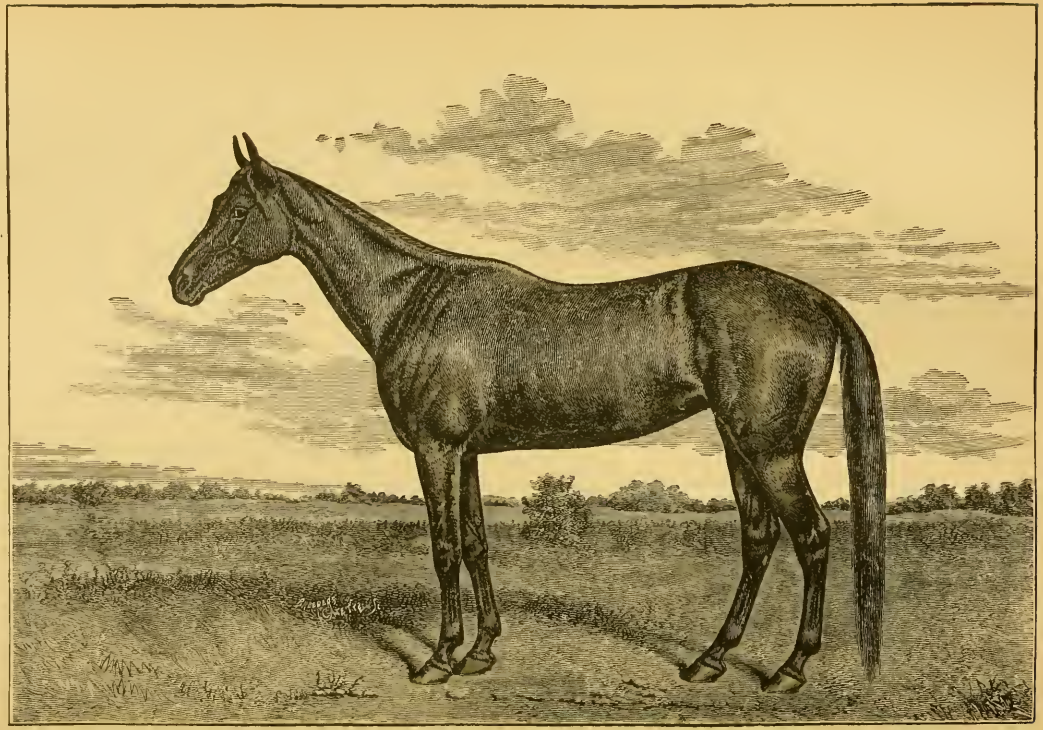
Miles.		Time.
¼	Belle, age and weight unknown; Galveston, Tex., July 3, 1880	0:21¾
½	Alitipa, 2, 97 lbs; Saratoga, July 25, 1874	0:47¾
⅝	Jim Renwick, 5, 115 lbs; San Francisco, Nov. 5, 1883	1:00½
¾	Farce, 5, 121 lbs; Louisville, Sept. 24, 1883	1:13
⅞	Joe Murray, 5, 117 lbs; Chicago, July 17, 1884	1:28½
1	Ten Broeck, 5, 110 lbs; Louisville, May 24, 1877	1:39¾
1⅛	Creosote, 4, 114 lbs; Louisville, May 19, 1882	1:48¾
1⅛	Rosalie, 4 (catch weight 80 lbs); Brighton Beach, August 13, 1881	1:53¾
1⅜	Kinglike, 4, 109 lbs; Monmouth Park, July 10, 1884	2:03½
1¼	Getaway, 3, 100 lbs; Saratoga, Aug. 4, 1881	2:07¾
1,500 yards	Ben d' Or, 4, 125 lbs; Saratoga, July 25, 1882	2:10½
1⅜	Uncas, 4, 107 lbs; Sheepshead Bay, Sept. 23, 1880	2:21¾
1½	Luke Blackburn, 3, 102 lbs; Monmouth Park, Aug. 17, 1880	2:34
1⅝	Ben d' Or, 4, 125 lbs; Saratoga, Aug. 19, 1882	2:49
1¾	Glidelia, 5, 116 lbs; Saratoga, Aug. 5, 1882	3:01
1⅞	Fosteral, 5, 95 lbs; Baltimore, Oct. 16, 1884	3:21½
2	Ten Broeck, 5, 110 lbs; Louisville, May 29, 1877	3:27½
2⅛	Monitor, 4, 110 lbs; Baltimore, Oct. 20, 1880	3:44½
2¼	} Springbok, 5, 114 lbs; } Saratoga, July 29, } Prenkness, a, 114 lbs; } 1875	3:56¾
2⅛	Aristides, 4, 104 lbs; Lexington, May 13, 1876	4:27½
2⅜	Ten Broeck, 4, 104 lbs; Lexington, Sept. 16, 1876	4:58½
2¾	Hubbard, 4, 107 lbs; Saratoga, Aug. 9, 1873	4:58¾
3	Drake Carter, 4, 115 lbs; Sheepshead Bay, Sept. 6, 1884	5:24
4	Ten Broeck, 4, 104 lbs; Louisville, Sept. 27, 1876	7:15¾

HEAT RACES.

Miles.		Time.
⅛	Red Oak, a, 114 lbs; Carson City, Nev., Sept. 16, 1879	0:49½
¾	Lizzie S., 5, 118 lbs; Louisville, Sept. 28, 1883	1:13¾, 1:13¾
1	Bounce, 4, 90 lbs; Sheepshead Bay, Sept. 7, 1881	1:42, 1:41½
1	3 in 5—L' Argentine, 6, 115 lbs; St. Louis, June 14, 1879 (won the 1st, 3d and 4th heats)	1:43, 1:44, 1:47¾
1⅛	Ben d' Or, 4, 117 lbs; Louisville, May 25, 1882. (There were three heats, Bootjack winning 1st in 1:49¾)	1:49, 1:51½
1⅛	Gabriel, 4, 112 lbs; Sheepshead Bay, Sept. 23, 1880	1:56, 1:56
1¼	Glenmore, 5, 114 lbs; Sheepshead Bay, Sept. 25, 1880. (There were three heats, Ma-y Anderson winning the 1st in 2:09)	2:10, 2:14
1½	Keno, 6; Toledo, Sept. 16, 1880. (1st and 3d heats. Belle of Nelson, 5, won 2d heat in 2:45)	2:45½, 2:45
2	Miss Woodford, 4, 107½ lbs; Sheepshead Bay, Sept. 20, 1884	3:33, 3:31¼
3	Norfolk, 4, 100 lbs; Sacramento, Sept. 23, 1865	5:27, 5:20½
4	Ferida, 4, 105 lbs; Sheepshead Bay, Sept. 18, 1880	7:23½, 7:41

HURDLE RACES.

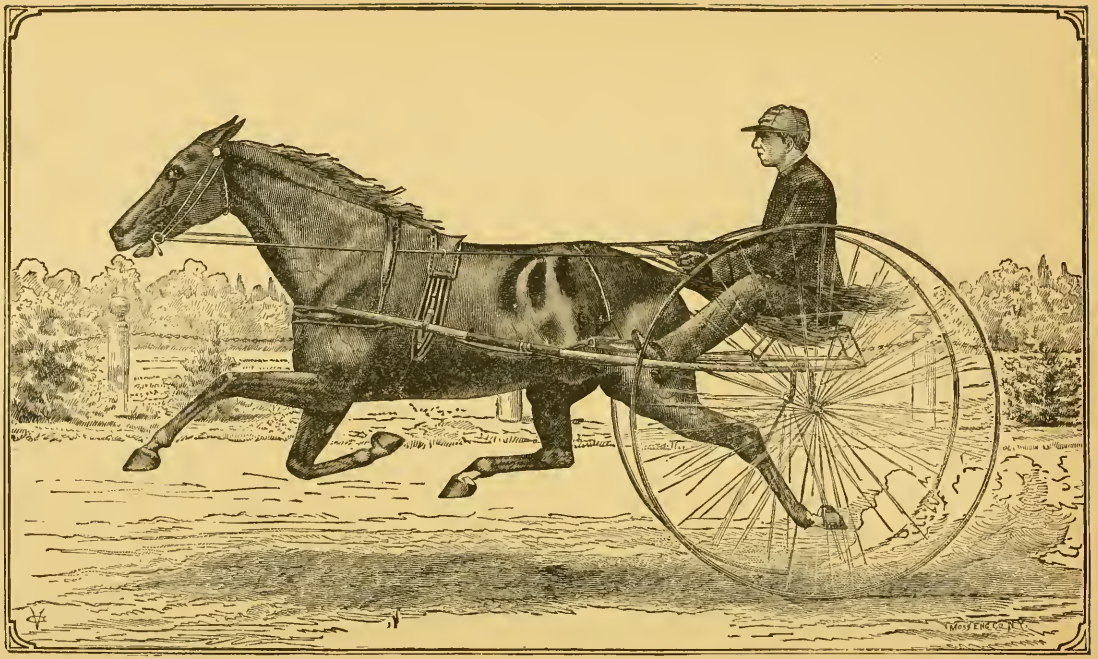
Miles.		Time.
1	Swannanoe, a, 120 lbs; Brighton Beach, July 16, 1881	1:50
1¼	Raven, a, 144 lbs; Saratoga, July 25, 1882	2:06
1¾	Jim McGowan, 4, 127 lbs; Brighton, Nov. 9, 1882	2:16
1⅜	Speculation, 6, 145 lbs; Jerome Park, Oct. 4, 1881	2:40
1½	Kitty Clark, 3, 130 lbs; Brighton Beach, Aug. 23, 1881	2:47
1⅝	Speculation, 6, 125 lbs; Brighton Beach, July 19, 1881	2:47
1¾	Judith, 5, 150 lbs; Monmouth Park, Aug. 19, 1880	3:17½
2	Tom Leathers, a, 117 lbs; New Orleans, April 16, 1875	3:47¼
2¼	Cariboo, 5, 154 lbs; Monmouth Park, Aug. 28, 1875	4:33
Mile heats	—Joe Rhodes, 5, 140 lbs; St. Louis, June 4, 1878	1:50¾, 1:50



MAUD S., 2:09¼.

MAUD S., 2:09¼.

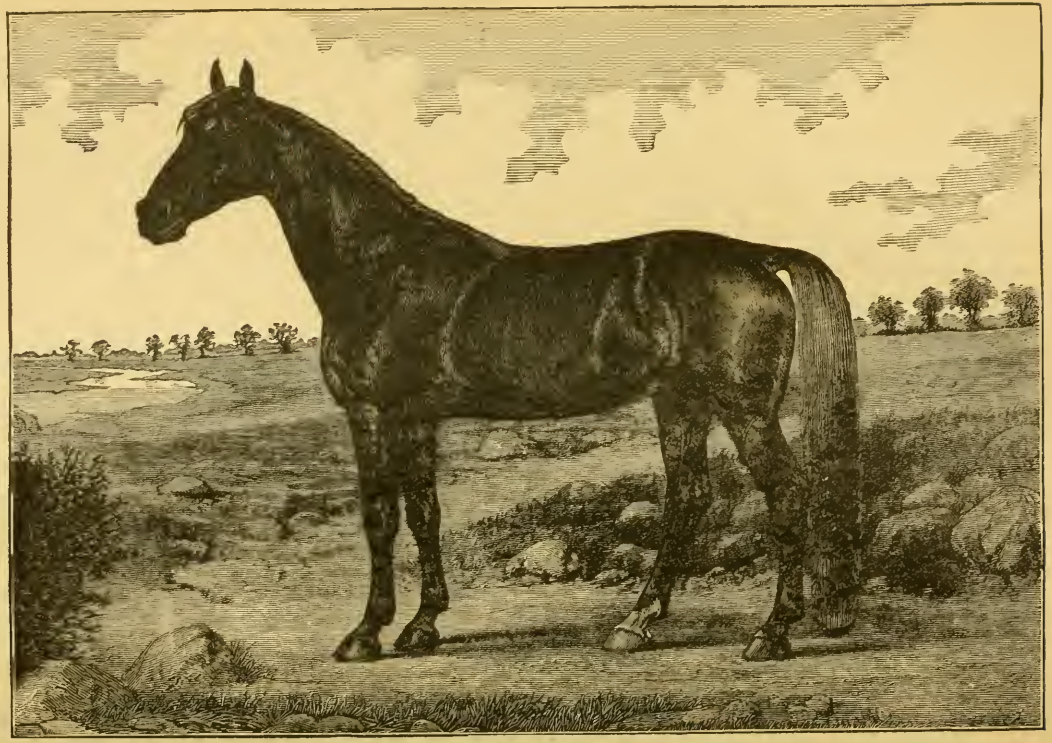
The queen of the trotting turf, Maud S., record 2:09¼, is a chestnut mare, about 15¾ hands high, foaled March 28, 1874, bred by A. J. Alexander, Woodburn Farm, Woodford County, Kentucky, sired by Harold, dam Miss Russell by Pilot Jr.; second dam Sally Russell, by Boston; third dam Maria Russell, by Thornton's Rattler. In 1884 she was sold to Robert Bonner, of New York city, for about $40,000. She was trained and driven from the start by William Bair, of Cincinnati, who still has charge of her. Her first race was at Cincinnati, July 6, 1880, which she easily won, in straight heats in 2:25, 2:30, and 2:28. On the 24th of the same month at Chicago, she trotted a match race with Trinket and won, in 2:19, 2:21¼ and 2:13½. Her fame at once became world-wide, and she was regarded as the crowning wonder. Four days afterwards at Cleveland she won again in three heats in 2:24, 2:18, and 2:31. August 4, at Buffalo, she lost the first heat to Charley Ford in 2:17, and won the next three in 2:15¼, 2:16¾ and 2:16½. On August 12 she trotted against time, the 2:12¾ of St. Julien, at Rochester, for $2,000, making the first heat 2:11¾. At Springfield, Mass., Aug. 19, she endeavored to beat her record at the last place, but failed, going the test mile in 2:19. At Chicago she went against 2:11¼, and trotted the second heat in 2:11½, losing again. On Sept. 18, her last race of the year, she went against 2:11¼, and won trotting right away the first trial in 2:10¾, which was the best record ever made by any trotting horse in harness or under the saddle. In 1881, on June 30, at Columbus, Ohio, she appeared as the adversary of time again, trotting in 2:17¼ and losing. At Detroit, Mich., July 4, she went two exhibition miles in 2:22½ and 2:13¾. At Pittsburgh, July 13, she went to beat her own record of 2:10¾ and accomplished it in 2:10½, and again the country rang with her praises. On July 15, at the same place, she went a mile in 2:15, failing to beat her former time. At Chicago, July 23, in endeavoring to lower 2:10½ she trotted in 2:21½, 2:11¼, and 2:11. On July 29, at Belmont Park, Philadelphia, against 2:14 she trotted in 2:12, 2:13¼ and 2:12½. For a special purse at Buffalo, N. Y., Aug. 4, two miles were made, the first in 2:15 and the second in 2:10¾. August 11, at Rochester, N. Y., for $3,500, to beat 2:10½, she went in 2:10¼, and that ended her career for 1881. On June 18, 1884, she came before the public again, at Morrisania, N. Y., and gave an exhibition mile in 2:18. On June 20 she made an effort to beat 2:14, and the mile was gone over in 2:24 and 2:13¾. At Cleveland, Ohio, Aug. 2, for a special purse of $200 to beat 2:11½, she made the astonishing time of 2:09¾, which electrified the world, and set the public to wondering where her limit was to be. At Lexington, Ky., Nov. 11, she once more covered herself with glory, making a record of 2:09¼.



JAY-EYE-SEE, 2:10.

JAY-EYE-SEE, 2:10.

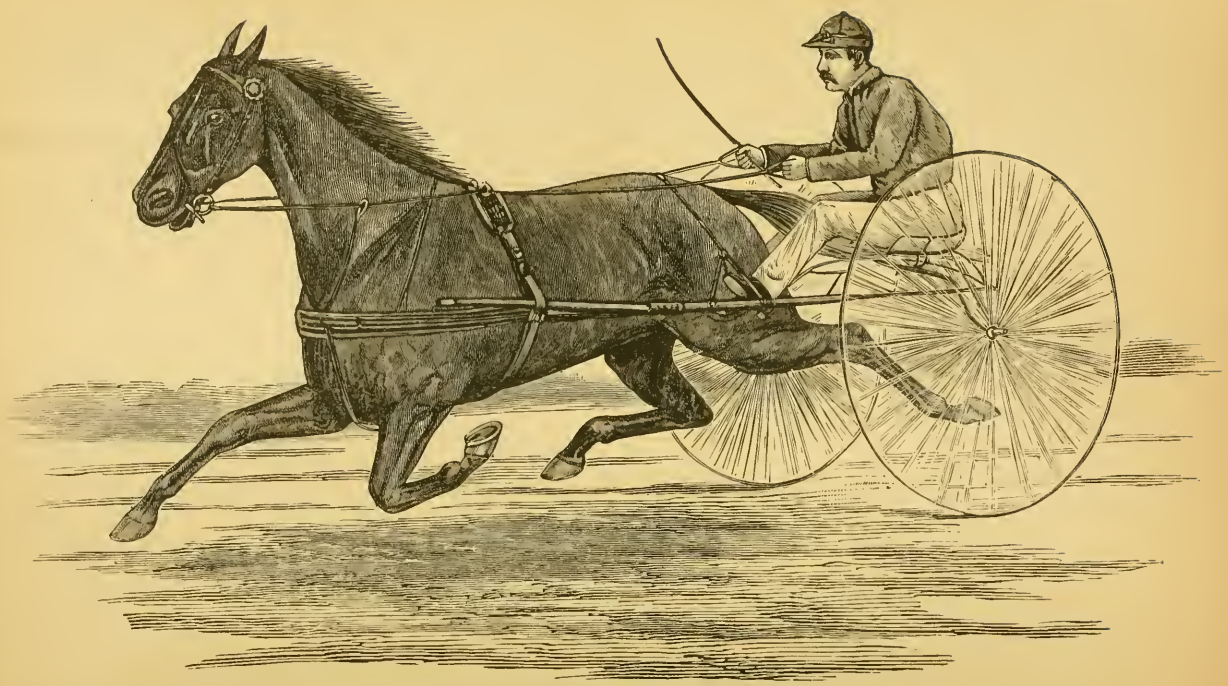
Jay-Eye-See is a black gelding, rather under-sized, foaled in 1878, sired by Dictator, dam Midnight, by Pilot Jr. He was purchased as a yearling by Hon. J. I. Case, of Racine, Wisconsin, for $500. His first contest was in the four-year stakes, at the Chicago summer meeting of 1882, in which event Bronze, Jim Bowman, Waiting, Ed. Geers, Adelaide, and the black gelding came together, and seven fast heats were fought before victory was finally attained by Waiting, who won in the first, second and seventh heats; Bronze won the third and fourth, and Jay-Eye-See the fifth and sixth, in 2:22¾ and 2:23½. At the fall meeting in the same class, and over the same track, he met one of his opponents, Bronze, who won the second heat, but Jay-Eye-See won the race, taking the first, third and fourth in 2:22¾, 2:19 and 2:19. This at once stamped him as the greatest four-year-old that had ever appeared upon the turf. The season of 1883 was opened at Louisville, Kentucky, in an exhibition trot with the gray gelding, Charley Ford, and he won easily in straight heats, the last being in 2:27½, which was the fastest of the race. At the Driving Park, at Morrisania, N. Y., in the five-year-old purse of $3,000, he had his field, which included the great Phil Thompson and Bronze, all distanced in the third heat; best time, 2:19¾. The race for same age at Washington, D. C., brought together the same field, and again the black gelding beat them out each heat in 2:19, 2:19¾ and 2:23. At the Chicago summer meeting he met Bronze and Adelaide in the five-year-old class, where he won as he liked in 2:29, 2:31 and 2:19. At Pittsburgh he won again just as easy, but they made him trot two heats fast, the second and third in 2:17 and 2:17¼. At Cleveland he met the famous bay gelding Majolica, whom he defeated in straight heats, in 2:20½, 216, 2:15¼. At Buffalo, in the $5,000 purse for six-year-olds and under, the "little wonder" beat Director and Clemmie G. He was the sensational trotter of the year, and the Rochester track hung up a purse of $2,000 for him to beat his record of 2:15½, which he accomplished in 2:14. At Hartford he failed to beat time; but at Narragansett Park he made the mile in 2:10¾. At Mystic Park, Boston, he made a mile in 2:15½. On Sept. 29th, at Fleetwood Park, N. Y., he beat the great St. Julien in 2:20¼, 2:18½ and 2:19. His last appearance for 1883 was at Chicago, when he went an exhibition mile in 2:18¼. During the year 1884 Jay-Eye-See's performances were against time entirely. On June 11th, at Chicago, he started to beat 2:10¼, and lost, going the second heat in 2:11¼. At Pittsburgh, July 22d, he trotted in 2:18½ the second heat. On August 1st at Providence against 2:10¾, he made his present record of 2:10. At Buffalo, the following week he trotted in 2:10¾, and at Belmont Park one week afterward he trotted in 2:10¼. At Prospect Park, New York, Aug. 28th he went a second heat in 2:12½. At Minneapolis, in September, 2:18½ was the fastest heat done. He made his last effort at Kalamazoo, September 13th, to beat his own 2:10, but being entirely out of fix he trotted a mile in 2:20½.



PHALLAS, 2:13¾.

PHALLAS, 2:13¾.

This great and renowned stallion who holds the best record for entire horses made in a race, is a handsome bay, 15¾ hands high, with a symmetrical and powerful conformation. He was sired by Dictator, his dam was Betsey Trotwood, by Clark Chief. He was bought in Kentucky by J. I. Case, of Racine, Wis., who still owns him. At the Chicago Horse Fair of 1882, Phallas made his first public appearance, going an exhibition mile in 2:22¼. The season of 1883 his debut in actual contests occurred. He came out for the word the first time in the 2:34 class, at Cleveland. Index won the first two heats in 2:32½ and 2:29¼; then Phallas was given his head and won the next three in 2:29¼, 2:22¼, and made the last heat in 2:18¼. His second race was in Fleetwood Park, New York, in the 3:00 class, where he met the famous Majolila, who won the first two heats in 2:22½ and 2:20¾, and the last heat Phallas drove him out in 2:17, which stands to-day the fastest record ever made in a three minute race. At Island Park track, Albany, N. Y., and at Washington, D. C., he was again forced to succumb to Majolica. At the Chicago summer meeting Phallas met and defeated Index and Adelaide in the 2:40 class; best time 2:21¼. In the 3:00 class for $3,000, he met Majolica once more. The first and second heats were won by the bay gelding, the first being the best, in 2:17. The next three Phallas won in hand in 2:16½, 2:20 and 2:21¼. At Cleveland, the week after, he met the celebrated Pittsburgh stallion, Duquesne, who won the first heat in 2:19¼. In the second heat Phallas made the mile in 2:15½. The next two heats he won in 2:21½ and 2:17½. At Buffalo he was again victorious, his best time being 2:23¾, in the first heat. A special purse was offered at Rochester the week after for the celebrated mare Trinket and Phallas, and the mare won in 2:19, 2:16 and 2:17. He won at Utica the next meeting after George V. had taken the first heat, best time 2:20. In the big $10,000 purse at Hartford he was beaten by Director, and at Beacon Park he had to take second place to the same horse, after winning the first and second heats in 2:20 and 2:22½. At the autumn meeting in Chicago in 1883, he defeated the two noted stallions, Monroe Chief and Maxy Cobb. Monroe Chief won the first two heats in 2:20 each, but the next three fell to Phallas in 2:18, 2:19 and 2:23. In 1884 he opened the season in the free-for-all at Chicago, losing the first heat to Catchfly in 2:19¾, then Phallas took the next three. The last heat was astonishingly fast. The first quarter was trotted in 33 seconds, the half in 1:07½, the three quarters in 1:40½ and the mile in 2:13¾, the fastest heat ever trotted by a stallion in a race against other horses. On August 1st, at Providence, R. I., he trotted two heats of an exhibition race in 2:15 and 2:13¾. The next week at Buffalo he trotted another race against time in 2:17¼, 2:16¼ and 2:19¼. At Philadelphia his time was 2:15, 2:14¼ and 2:15½. At Prospect Park, August 28, he showed the public three heats in 2:18¾, 2:20¼ and 2:17¼. He wound up the season at Kalamazoo, Mich., Sept. 13, trotting in 2:19½ and 2:19¼.

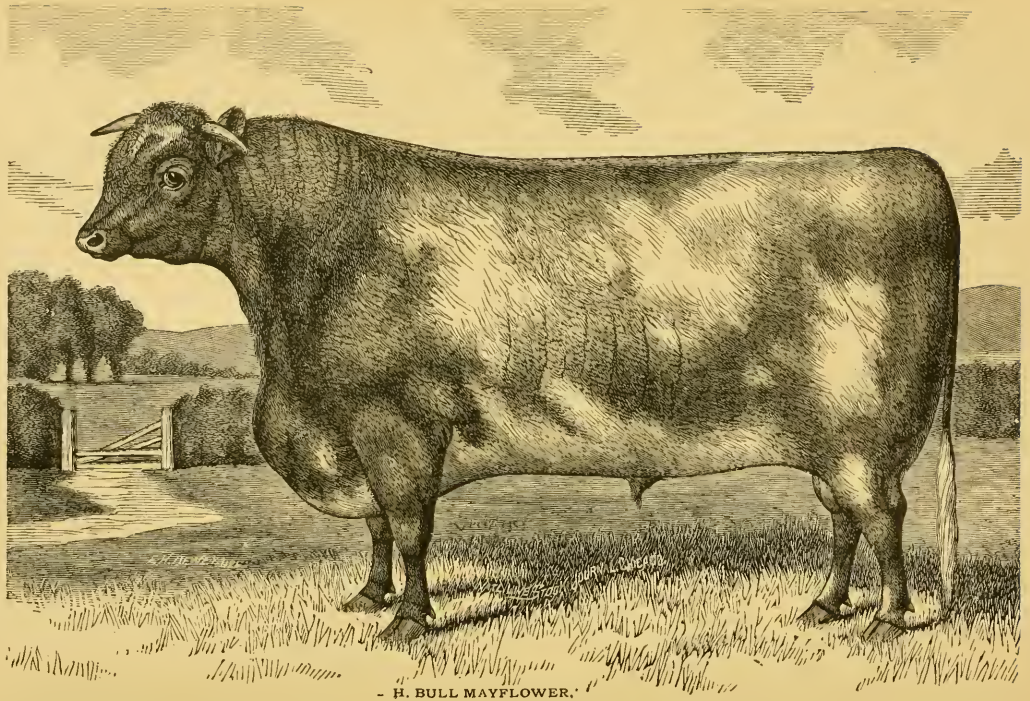


JOHNSTON, 2:06¼.

JOHNSTON, 2:06¼.

THE PACING KING.

Johnston was foaled June 20, 1877, at the farm of Cary Bros., of Aurora, Wisconsin, by whom he was owned. As a four-year-old he paced a quarter in 32 seconds, and a half-mile in 1:10, and had trotted a quarter in 40 seconds. In the spring of 1883 he was placed in the hands of Peter V. Johnston, of Chicago. The summer meeting of 1883, at Detroit, Michigan, was selected for his debut, and he won his first race in straight heats in 2:25½, 2:28½, and 2:22¼, beating a field of eight. At East Saginaw he disposed of about the same lot in 2:21, 2:21½, and 2:27. At Kalamazoo the same result was attained, the time being a deal faster. It was 2:18, 2:21½, and 2:17¼. On July 15, in the 2:30 class, he was cut loose the first heat, and pacing it in 2:13, he left all but one behind the flag. The second heat she also was left outside in 2:15¼. The horse here won the full purse of $2,500, and the extra $500 for beating 2:20. At the same meeting he paced against the record of Little Brown Jug, 2:11¾, and succeeded in making a tie of it, doing the mile in exactly that time. His next appearance was at the October meeting at Chicago, when for a purse of $1,000 he paced against the record of Maud S., then 2:10¼, and triumphantly carried the crown of the victor into the camp of the pacers, pacing the heat in 2:10. This was his last performance for 1883, and during that fall he was sold to Com. N. W. Kittson, of St. Paul, Minnesota. On June 21, 1884, he began the season's work at Indianapolis, and over a slow half-mile track, he paced two miles, one in 2:27 and came back in 2:29. At Chicago on July 12, with a bad track, he paced the first heat in 2:23¾, the second in 2:11¼, and the third in 2:12¼. In the free for all pace at Buffalo, N. Y., he won first heat and first money in 2:12¼. At Rochester he paced in 2:11¼. On August 23 in a match for $2,500 a side, he met Richball and defeated him with ridiculous ease in 2:13, 2:11¾ and 2:13¾. At Minneapolis he won again in 2:13 and 2:17¼. On Sept. 18, at Milwaukee, he paced a mile in 2:11¼ against time, and at the same track on the 27th he equaled his own record of 2:10. This performance over an ordinary track led Splan to believe that the horse had plenty of speed in reserve and could he catch a day and track just right he could beat 2:10 away off. Chicago was the course selected, and on the opening day of the fall meeting, Oct. 3, the weather and track were propitious, the elements and surroundings favorable, and the circumstances conspired to secure success. At the word for the second attempt, the pacing thunderbolt shot like a catapult from the wire, and he whirled by the quarter pole in 32 seconds, the half-mile pole was passed in 1:03½ and the horse was showing no signs of slacking up. At the three-quarters the timers marked 1:35. As Splan got inside the distance he saw that he had Father Time by the forelock, sure and safe, and lifted the horse twice, cheering him on with his voice. The horse finished strong and gamely in the unparalleled time of 2:06¼, the fastest time ever made by a horse to harness.



- H. BULL MAYFLOWER.

THE

AMERICAN CATTLE BOOK

BEING A

MODERN TREATMENT OF THEIR DISEASES,

WITH A

HISTORY OF THE DIFFERENT BREEDS.

WRITTEN FROM A PRACTICAL STANDPOINT,

FOR THE USE OF

THE AMERICAN FARMER AND BREEDER.

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CHAPTER I.

HISTORY OF DIFFERENT BREEDS.

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DIFFERENT BREEDS.

SHORT HORN CATTLE.

This breed of cattle has attained a distinction and won a substantial appreciation which no other race has so fully and widely enjoyed among the enlightened graziers of the world. From Great Britain its dissemination has extended to the continent, to Australia, to South Africa, South America, Mexico, and the West Indies, while it has secured almost a monopoly of the importations of this country and Canada. For the grass pastures of the Ohio valley, and the abundant, natural, and cultivated grasses of the broader prairies of the Mississippi region, it is admirably fitted, and held in high esteem as the most economical machine for the speediest conversion of corn and grass into meat and money.

The original short horns occupied the east of England, Yorkshire, and the valley of the Tees at the date of the earliest records of

British stock-growing. They were various in size, color, and other peculiarities; the dark-skinned herds of the fens resembling the black cattle of Holland marshes, and the finer forms of Yorkshire and Durham assuming the style and quality of the noted cattle of Holstein and Jutland; and yet it may not certainly be known whether the ancient emigrants from those localities brought this stock to England, or whether this similarity is the result of climate and keeping. It was, at least, a race very distinct from that of Ireland and the west of England, with long horns, thick skins, and a heavy coat of hair, well suited for their protection in a climate subject to continuous seasons of rain. It is well known in later times that Dutch and Danish importations modified these cattle of the east of England, and suggested the more recent and greater improvements of Charles and Robert Colling, commencing about the era of our revolution, and continued successfully since by Messrs. Bates, Booth, Townley, and others in England, and Thorne, Alexanders, and other breeders in this country.

The story of the bull Hubback, the founder of the modern short horn, has often been told. He was purchased in 1783 by Charles Colling of his brother and a Mr. Waistell for eight guineas, and is said to have been from a cow grazed by a poor man on the highway. It has long been a matter of controversy whether he was a pure-bred Teeswater, the short horn of that day. He was somewhat below the usual size of the Teeswaters, yellow, red, and white in color, of a fine, compact form, admirable touch, and so easily fattened that he early became useless as a bull. The cow, also purchased by Colling, acquired fat very rapidly, and never again bred. Either from mere curiosity, or from a suspicion that he was impairing the constitution of his animals by continuous breeding in too small a circle, Colling attempted the experiment of infusing some of the Galloway blood, which was confined, it is understood, to a single cross upon certain individuals of his herd. At the sale of Charles Colling, in 1810, forty-seven animals produced 8,911 guineas. Robert Colling, not so renowned, but esteemed by many quite as judicious a breeder, sold sixty-one (but six of them bulls) for 7,484 guineas. High prices have

been maintained by later breeders. Mr. Bates, in 1850, sold one family of Duchess stock, including calves, at an average of $581. Lord Ducie's herd, in 1853, realized an average of $760 for sixty-two animals. Individuals of superior excellence, from the day when Colling's "Comet" sold for 1,000 guineas, have commanded fabulous prices. Similar prices have been obtained in this country.

There were at least five hundred herds of pure-bred short horns in Great Britain ten years ago, and from six to seven thousand head are registered in the herd-book every alternate year at that period, and these numbers are yearly increasing in accelerated ratio.

Derived from a large breed, the improved short horn is heavy, less in height than the originals of the Tees, rounder and deeper in the trunk, the limbs shorter, chest and back broader, appearing less in bulk, while really greater in weight. The skin is light colored, hair reddish brown or white or mixed, the muzzle flesh colored, the horns shorter and lighter colored than in the former breed, the skin soft to the touch, the form square, the shoulder upright, and the hindquarter large. The color cannot be characterized by a single term, varying greatly from a pure white to a rich red, a mixture being the fashion, known as roan or strawberry. The skin should be velvety and not too thin, while the hair should be plentiful and of a mossy softness. The head of the female is finer and more tapering than that of the male, the neck thinner and lighter, and her shoulder inclining to narrow towards the chin. The short horn looks smaller than he is. He excels all other stock in facility of fattening, making good and heavy beef in thirty months, and even in two years.

The idea is somewhat prevalent that short horn cows are not good milkers. It has been obtained, without doubt, from the fact of the well known efforts made to perfect their fattening qualities, in accordance with Bakewell's saying that "all was useless that was not beef;" and it is true of many families of short horns. Others are superior milkers. The original Holstein blood of the Durham and Holderness districts was famous for its milking quality, and it is difficult to breed it out with all the culture which modern improved short horns have received. The modern Holderness stock at this day

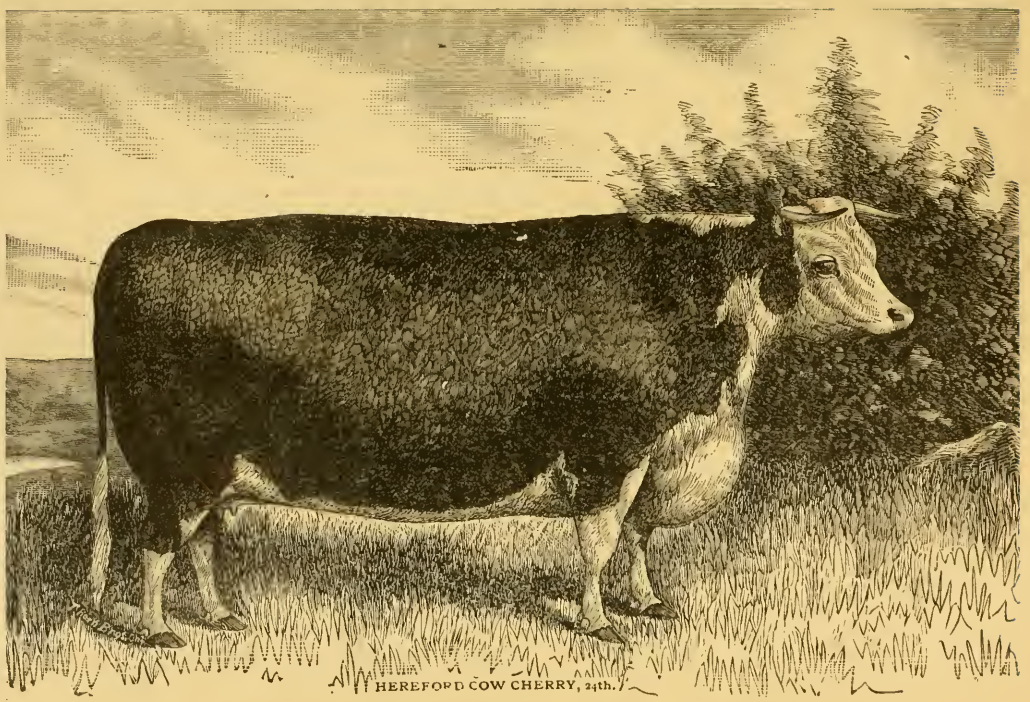
chiefly supplies the London dairies, and many of their best milkers have strong strains of the improved blood. The Duchess stock, of great celebrity and purity, bred by Mr. Bates, was distinguished for its excellence in this respect. Some Shorthorns in this country have yielded ample supplies of milk of excellent quality.

AYRSHIRES.

The Ayrshire race of cattle was created in Scotland in the first half of the eighteenth century. Various accounts are given as to the exact date and location of the origin of the breed. It seems to be clear that the blood of the Alderneys gave to the Ayrshires some of the characteristics that make them valuable. To a strain of West Highlander blood may be due that high spirit which makes the Ayrshire quick to resent such abuse as is too often showered upon cattle, by savages a strained courtesy calls civilized. Kindly treated, the Ayrshires are gentle and tractable.

Yellow, red, and white are predominating colors in Ayrshires. Their horns are larger and stronger than those of the Jerseys, yet are not usually coarse and large. While lacking the delicate beauty of the Channel Islands cattle they are yet finely formed, many of the cows being almost perfect models of the ideal milch cow. Breeders in Scotland, where great pride is felt in this stock, have long worked to produce cows of good form; but in America more attention has been given to developing the milking properties, although form has not been ignored.

As milkers the Ayrshires are justly famed. Of an exceedingly robust constitution, they are little affected by changes in the weather, and when, under the influence of cold and wet weather, other cows fall off materially in flow of milk, these placidly feed as usual, and keep up their yield. They are most persistent milkers, and their milk is, in its natural state, as a perfectly proportioned food, unsurpassed by that of any other cattle. While it may not be so rich in butter as that of the Channel Islands breeds, and may contain less cheese than does that of the Dutch stock, it has a more evenly proportioned supply of muscle and of fat-making elements than has that of any of the other races mentioned. As Ayrshires are less subject to tuberculosis or consumption than are some other cattle, their milk is more wholesome than



HEREFORD COW CHERRY, 24th.

that of animals in which the germs of that malady are active — a matter of great moment to humanity, since it has been often proved that disease germs are transmitted in milk from cows to mankind.

The Ayrshire Breeders' Association has published several volumes of its herd book. The headquarters of the secretary are in Boston.

ABERDEEN-ANGUS.

Several polled or hornless breeds of cattle are known. Chief among these are the Aberdeen-Angus and the Galloways of Scotland, and the red polled breed of Suffolk and Norfolk in England. A polled herd has long existed in Austria. The Aberdeen-Angus, the Galloway, and the West Highlander doubtless descended from the aboriginal wild horned cattle of ancient Caledonia. The marked differences now apparent between the three breeds named are the result of diverse systems of management, and of peculiar conditions of climate to which the breeds were long subjected. The Aberdeen-Angus were reared on highly cultivated farms in the dry, cold northeast of Scotland. Since the beginning of the current century the race has steadily improved, under the care of such breeders as Hugh Watson, of Keillor, who began the work in 1808, William McCombie, of Tillyfour, the Fergusons of Kinnochtry, the Grants of Ballindalloch, and others.

In body the Aberdeen-Angus are long, round, compact, and even; in skin mellow, and with silky hair; in bone fine, in flesh thick, juicy, and tender. They mature as early as do any cattle, and fatten readily, their beef being well marbled, of good flavor, free from patches or lumps of tallow. The fineness and shortness of their necks, heads, and legs lead to erroneous judgment of their weights, which are as heavy as the average weights of animals of greater stature. In temper they are very docile, yet their courage nothing daunts.

In the show ring they have been successful. In competition with the best the world exhibited at the International Exposition at Paris, in 1878, a herd of fifteen Aberdeen-Angus cattle swept away the highest honors. Every one of the herd won either a prize or an honorable mention. No other one of the sixty-four varieties of cattle there gained as much. The bull Paris (1473) and five cows took the first prize offered for the best group of beef-producing animals exhibited. The cow

Beauty of Candyglearch shown opposite page 460 in this volume, is a daughter of Paris (1473). The grand sweepstakes and gold medal for the best beef animal was awarded to the bull Judge (1150), shown in the engraving opposite page 436. Judge won many valuable prizes at home and in America.

In the United States the breed has risen rapidly in favor, and a number of herds have been established. A herd-book association, having its headquarters in Kansas City, Mo., was organized in Chicago in November, 1883.

GALLOWAYS.

Galloway cattle have been bred most extensively in the old Galloway district of southwestern Scotland. This race is almost identical with the West Highland breed, except that the latter have horns and are of various colors, while the Galloways are black. It is not known when the first hornless cattle appeared in that region, but Youatt says that about 1750, "only some of them were polled." Other writers fifty or sixty years later said "only a few have horns." As it is very desirable that the hornless character of the Galloway shall be preserved, and the tendency to breed true to that characteristic should be strengthened and intensified, the Galloway Cattle Society adopted a rule a few years ago, forbidding the admission to the Scotch Galloway Herd Book of the pedigree of any animal having the slightest trace of scurrs, which are scaly remnants of horns. The adoption of that rule is not, however, proof that animals having scurrs are necessarily impurely bred.

The Galloways are handsomely formed, resembling the Aberdeen-Angus in general appearance. Both breeds are black, with a little white on the udder and belly. The hair of the Galloway is coarser than that of the other, his skin is perhaps thicker and stiffer, and it is charged that he is slower in maturing than are his kindred of the northeast. The Galloways are justly renowned as graziers, are hardy beyond all other established races of cattle except the West Highlander, and are thus especially well adapted to the hardships of the open ranges of the West. They are noted for their fixity of type. The offspring of the union of the Galloway bull and the long-horned cows of the plains resemble their sire in color, in hornlessness, in hardiness, and, to a considerable extent, in form.

In the quality of their beef, in percentage of nutritious, palatable flesh to gross weight, in prepotence, in ability to care well for themselves and their young under trying hardships, in gentleness of disposition coupled with undying courage the Galloways are at least equal to any known race of cattle.

CHANNEL ISLANDS CATTLE.

In the English Channel lie three islands from which three widely known and distinct breeds of cattle have come. Alderney is sixty-two miles due south from the coast of Dorsetshire, in England, and seven miles west from the French province of Manche, in northwestern France. Jersey is ninety-five miles from Dorsetshire, and fourteen from Manche. Guernsey lies twenty miles southwest from Alderney, and the same distance northwest from Jersey.

The three breeds, each bearing the name of the island whence it comes, so resemble each other that a description of one will serve for all. They are fine in bone and horn, very thin and soft in skin and hair, usually fawn-colored, with black nose, tongue, horns, hoofs, and switches. Some years ago a fancy led breeders of Jerseys to try to eradicate all colors other than black and fawn; but of recent years the development of the butter-producing capacity has been deemed more important than fancy colors. The cows are very gentle, and many of the bulls, particularly the Jerseys, are vicious.

For some centuries the cattle of Jersey have been bred absolutely pure, no bovine animal from abroad capable of breeding having been permitted to land alive on the island. Consequently the race breeds true to its characteristics, and is in its native home free from all epidemics.

Few Guernseys and yet fewer Alderneys have been imported by Americans. Jerseys are, however, to be found in every part of this country, and have long been one of the most popular breeds in the land. Their chief value lies in their capacity for producing milk of exceeding richness, from which large quantities of butter of nutty flavor, firm texture, rich color, and delicious aroma are made. Under the brands of men of known integrity, Jersey butter sells readily for prices ranging from fifty cents to one dollar per pound.

In the year 1882 a list was published giving the names of sixty-seven registered Jersey cows that had produced between fourteen and fifteen pounds of unsalted butter in seven days; of those that had made more than fifteen and less than sixteen pounds there were twenty-two; twenty-five gave between sixteen and seventeen pounds; sixteen had a record of seventeen and less than eighteen pounds; five were credited with eighteen and less than nineteen pounds; two made between nineteen and twenty pounds; three were recorded as having produced twenty-one and less than twenty-two pounds; and Jersey Belle of Scituate 7828 was recorded as having made twenty-five pounds and three ounces of butter in seven days. Eurotas 2454, in one year produced 778 pounds and one ounce, and the unregistered cow, Jersey Queen of Barnet, produced 770 pounds of butter in one year.

The publication of records of butter tests led to a systematic feeding and testing of cows of this breed, as well as of others, and did more than any other one cause to raise the Jerseys in general esteem. Skillful management developed the butter-producing powers of individual cows until in the seven days ended with March 1, 1885, the cow Princess 2d 8046 gave 299½ pounds of milk, from which were churned 44 pounds 1½ ounces of unsalted butter. This was increased to 46 pounds 12½ ounces by adding one ounce of salt for each pound of butter. It will be seen that each pound of the butter was made from 6·8 pounds of milk.

Cows got by mating Jersey bulls with cows of other breeds have the beauty and gentleness of the Jersey, and their milk and butter have, as a rule, much of the richness possessed by the milk of the purely bred Jersey; their butter also has the rich flavor, color, and fragrance of the butter from the full blood. This fact makes such bulls valuable for improving other stock.

The American Jersey Cattle Club has fixed the fee for registering pedigrees of Jersey bulls at $10 each. One effect of this rule is to prevent the registration of many good young bulls. Unregistered bulls can be sold for little if any more than the value of scrub calves of like weights. For increasing the butter-producing power of the general dairy stock of the country, such bulls are fully as good as they would be if registered.

HOLSTEIN AND DUTCH CATTLE.

The Holstein cattle are not only large and well developed, making good beef cattle, yet, at the same time, are extra good milkers for the dairy. They have not been imported in so large numbers as the Shorthorns, nor subject to so much speculative dealing, yet of late years they are coming rapidly into notice as a very profitable breed — for the stock raiser or for dairying.

Now, properly speaking, everything from Holland is Dutch; so, with propriety, these Holsteins might be called Holland or Dutch cattle, were there not a class or breed of black and white cattle in this country known and recognized under the name of Dutch or Belted, which are totally different from the Holstein or Holland cattle in most respects.

The Dutch or Belted cattle come from Germany. They were first raised more for their peculiar markings than their superior qualities; are almost entirely black, with a white band or stripe of white around their middles, and are generally known as Belted cattle. In answer to questions whether the so-called Belted and spotted Holsteins are the same breed of cattle, differing only in form of these color markings, we would say most decidedly that they are not the same, coming as they do from different sections of the country. Belted cattle are never seen in Holland, and are of very different form, smaller, different temperament, and yield much smaller quantities of milk than the spotted cattle. In short, the Belted cattle are not Holsteins, and are not admitted to the Holstein Herd Book.

DEVONS.

Among the first cattle brought from Europe to the New World, the docile Devon doubtless had a place. Then as now, they were unequaled in the yoke, gave a goodly mess of milk of fair richness, and made a reasonable weight of beef streaked with threads of golden fat, when the day of their usefulness at the pail or in the yoke had passed. Thus the Devon filled — better than any other one breed could have done — the requirements of the pioneer. They were of general utility where a purely butter, beef, or milk breed would have been of comparatively little value. In the yoke they move alertly, are strong, intelligent, and

above all others obedient. They are less compact in frame and longer in the leg than the Aberdeen-Angus, the Galloway, or the Hereford, but are more thickly fleshed than the Jersey and the Holstein. The Devon occupies a place between the most "beefy" of breeds and those bred for the dairy; thus the Devons are a general-utility breed, especially valuable for the farm, particularly in timbered country.

In color Devons are uniformly a rich red. In apparent size they are less than the Shorthorn, but are rounder and smoother than some families of the latter. In average weight they are less than some cattle of smaller stature; in docility males and females are unsurpassed by those of any other race. Their horns are fine, slender, and rather long; usually white. The skin is mellow, of moderate thickness and covered by a fine soft coat. They fatten readily, and make good beef. Altogether they are desirable cattle for the general farmer; but are not kept so prominently before the public as some other cattle have been of recent years. As any country becomes cleared of forests, and yoke cattle give way to horses in the work of farm and highway, the demand for Devons becomes less. Only a single one of the United States, Alabama, showed by the census of 1880 an increase in the number of working oxen over the number in use in 1870. Every other state and territory showed a decrease. This may show why the Devon is not to-day one of the most popular races of cattle in this country. The office of the secretary of the American Devon Association is in Zanesville, Ohio. Several volumes of the American Devon Record have been issued by the Association.

HEREFORDS.

The Hereford breed of cattle originated in the country of Hereford, England, about the year 1750. The breed was introduced into America by the Hon. Henry Clay in 1817, and in 1840 Erastus Corning and Wm. H. Sotham of New York state imported a number of this breed. For years the Hereford vainly fought for the recognition their merits deserve; but it was not given them until the open plains of the West enabled them to show their superior value for those ranges. During the last ten years they have risen with notable rapidity in public esteem, until they now hold, firmly and safely, a place as one of

JERSEY BULL.

the best of all known races of cattle. In numbers the "Whitefaces" are next, in America, to the Shorthorns. In selling value they outrank all other pure beef breeds, except the Aberdeen-Angus. In form they are remarkably "beefy," compact, thick-bodied, deeply fleshed, their round, full, and even bodies resting on very short legs.

They endure hardship well, struggling with unfailing courage for existence in circumstances under which many other cattle would yield and die. When reduced by hard usage and scant fare they recover flesh rapidly, and soon begin to fatten when restored to good diet. Their beef is tender, nutritious, and finely flavored, and they dress a most profitable percentage of meat to the gross weight. For crossing with other stock, they are invariably found potent to greatly improve.

In color the top of the neck and head, the face, throat, brisket, and belly are pure white, and the lower part of the legs is also white. The rest of the body is covered by a soft, thick, and mossy coat, usually of a deep red. The skin is thick and mellow. This, with the thickness of the coat, serves to protect the animal from changes in weather that would be most trying to less rugged cattle.

In the show yard they have compelled honorable awards in closely contested fields. They are much liked by farmers, particularly in the West, and by stockmen of the plains.

The American Hereford Association issues a herd book each year. The office of the secretary is in Independence, Missouri.

CHAPTER II.

THE CHEST, ABDOMEN AND URINARY ORGANS.

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DISEASES OF THE RESPIRATORY ORGANS.

INFLAMMATION OF THE LUNGS.

The causes of this disease are overexertion and subsequent exposure, or exposure alone. It is ushered in by a fit of shivering, a drooping appearance, loss of appetite, and subsequent feverishness. It is an affection of the cellular portion of the lungs, which become

so congested with blood, in its worst stages, as to obliterate the air cells of the portion affected, the extent of this hepatization being the measure of the severity of the disease. The action of the lungs is more rapid than in health, though the inspiration is not long and deep, but of a short panting character. If it be a cow that is affected, she will soon dry up. In bad cases the breath is hot, the animal stands with legs wide apart, and with nose extended toward window or door as if for pure air. She is generally hidebound, muzzle hot and dry, and nasal membrane scarlet.

It is best not to give purgatives, as they are too reducing. If it is necessary to move the bowels, do so by repeated injections of warm soap-suds. Blankets wrung out in hot water should be continually applied to the chest and sides, or a blister of turpentine and mustard may be applied, Whatever treatment is adopted, no delay must take place. If there should be loss of strength, and evident pain present, the following may be given every three hours:—

Tincture of Aconite, twenty drops;
Carbonate of Ammonia, four drachms;
Belladonna, two drachms·
Water, one pint.—Mix.

If she will eat, the medicine may be given in a bran mash, or in some gruel. The legs should be bandaged, or rubbed with some stimulating liniment. In the later stages of the disease, the following is an excellent remedy:—

Acetate of Ammonia, three fluid ounces;
Tincture of Gentian, half a fluid ounce;
Water, one pint.—Mix.

The animal should be kept in warm quarters, and especial attention paid to food. Gruel and mashes should be the main reliance, until well on the way to recovery. One full meal may bring serious results.

PLEURISY.

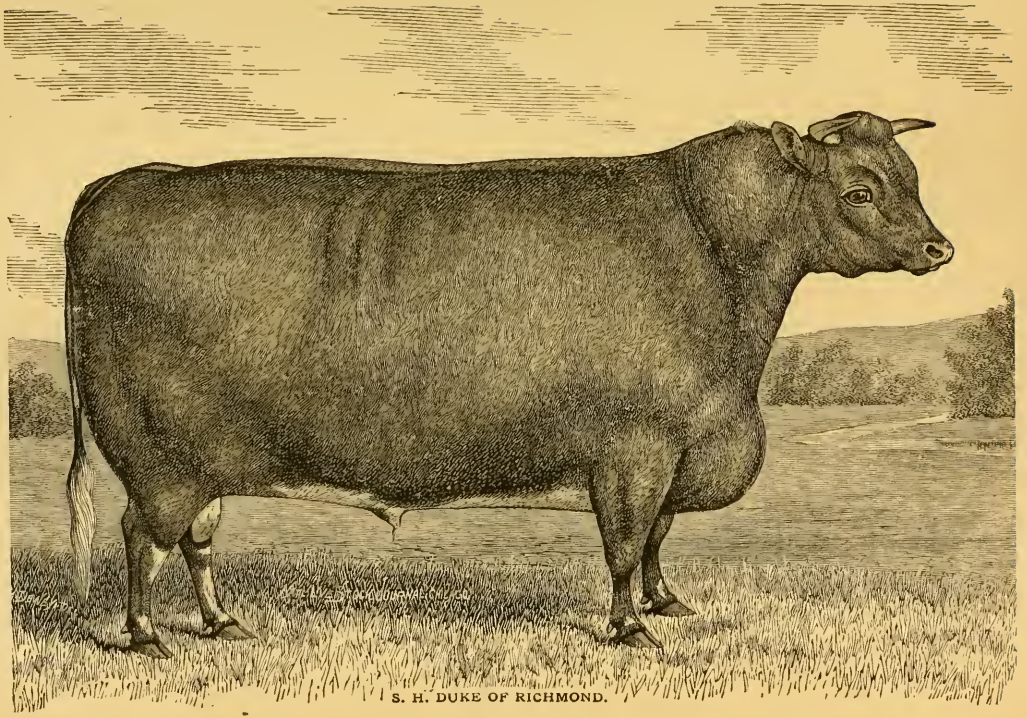
This is an inflammation of the pleura, or membrane lining the chest, and enveloping the lungs. The causes of the disease are about the same as those producing inflammation of the lungs. It is more

apt to attack those of rheumatic tendency. One of its prominent symptoms is the changes in the character of breathing, there being extreme tenderness of the muscles of the chest, respiration is carried on by the use of the abdominal muscles. The inspiration is short and jerky, while expiration is slow and guarded. There is a ridge of muscles running from the hip to the lower part of the last ribs. There is also extreme tenderness in places, between the ribs on the sides, and pressure cannot be borne.

There is generally more or less effusion, or collection of water, in the chest, which in slight cases is reabsorbed again during recovery. The effusion, called hydrothorax, may be so serious as to produce suffocation by its quantity. When there is danger of this, it must be drawn off by the use of the trochar and cannula, only removing a portion each day, the operation extending over a period of from two to three days. After the fluid has been withdrawn, the cavity of the chest may be injected with a weak solution of carbolic acid and again withdrawn, which will prevent decomposition and evolution of gas from any remaining fluid, and at the same time produces a remedial action on the parts. In serious cases, the time the effusion of fluid has commenced, will be announced by a mitigation of all symptoms, which again begin in an aggravated form, producing suffocation and death. The breath in this disease is not so hot as in inflammation of the lungs.

The treatment needs the same general care as in inflammation of the lungs. Counter-irritants in the form of blisters, hot applications, etc., to the front of the chest and upper portion of the sides should be commenced at once. It is not best to blister the portion of the body on which the animal may lie. Purgatives had better not be given, but reliance placed on injections, if it is necessary to move the bowels. Diuretics should be used freely, combined with febrifuges. The following will be as good as can be given in the early stages of the disease, where there are feverish symptoms:—

Tincture of Aconite, twenty drops;
Acetate of Ammonia, three fluid ounces;
Water, one pint.—Mix.



S. H. DUKE OF RICHMOND.

Give every two hours, and if there should be evident signs of pain, with sinking symptoms, administer the following between the times stated for the above:—

Carbonate of Ammonia, four drachms;
Extract Belladonna, two drachms;
Water, one pint.—Mix.

In the latter stages of the disease, when the water has collected in the chest, one drachm of iodide of potassium should be given three times daily. During recovery, one drachm of iodide of iron, and half an ounce of tincture of gentian in a pint of water, may be given with advantage, twice, daily. Care must be taken not to allow the stomach to be overloaded.

BRONCHITIS.

This disease is an inflammation of the air passages, or larger tubes of the lungs. It is always accompanied with a cough, which is hard or soft, according to the severity of the disease. The advent of the disease is announced by a dullness and drooping of spirits, often loss of appetite. The mouth will be hot and dry, and the nasal membrane is scarlet or reddish-brown, according to the serious state of the disease. The cough is at first harsh and barking, but as soon as the whitish discharge is established from the nose, it gets more soft and rattling. Tapping of the chest shows no alteration in the structure of the lungs. The discharge from the nose takes place about the third or fourth day, and recovery dates from this period. The animal may lie down most of the time. There will be no tenderness between the ribs, as in pleurisy.

The treatment consists of a warm stable, soft food and good care. If it is a slight attack, a laxative may be given, consisting of a quart of linseed oil. If there is evident weakness, and the mucous membrane of a yellowish cast, depend on warm water injections to move the bowels. Three fluid ounces of sweet spirits of nitre may be given twice daily. The front part of the throat and chest may be blistered, or cloths wrung out in hot water may be applied, and covered with blankets. The nose bag, as recommended for horses, is an excellent

means of bringing on the discharge earlier, and thus cutting short the acute stage of the disease. If there is evident signs of weakness, and the cough distressing, give the following:—

Acetate of Ammonia, three fluid ounces;
Tincture of Squills, one-half fluid drachm;
Water, one pint.—Mix.

Repeat the above two or three times daily, or even oftener, if case demands it.

CATARRH, OR COMMON COLD.

The mucous membranes of the eyes and nose are at first dry and reddened, but in a few hours they become moist and discharge a thin, watery secretion, which is eventually dense, opaque and copious. The eyelids are tumefied, and increased heat is manifest in the bones of the forehead. The animal sneezes, and not unfrequently there is cough. Febrile symptoms sometimes run high, and a repetition of such attacks terminates in pleuro-pneumonia. A simple state of diarrhœa sometimes occurs. The progress of the disease is accurately betokened by the nature and rapidity with which the discharge is promoted. If it is scanty and tardy, the fever is generally severe, consisting of difficult breathing, loss of appetite, suspension of rumination, rapid and hard pulse, constipation, deficient urine, etc., all of which are doubtless preceded by shivering fits and a staring coat. If, in a day or two, the discharge increases, becomes purulent and copious, fever is diminished, and recovery speedily follows; but if the system is still exposed to the causes that induced the disease, the termination may be chronic nasal gleet, malignant catarrh, or sporadic pleuro-pneumonia. If diarrhœa is present, administer at once, the following, twice each day:—

Tincture of Gentian, half a fluid ounce;
Laudanum, one fluid ounce;
Aromatic Spirits of Ammonia, one fluid ounce;
Water, one pint.—Mix.

If the bowels are constipated, one pound of epsom salts may be given, combined with a tablespoonful of ginger and a pint of warm

water. The animal should be removed to comfortable quarters, or at least from all exposure to the influences that have caused the affection. The skin should be stimulated by smart friction and even clothed when necessary. The food should consist of bran mashes, roots and green food when they can be obtained; and with such a diet daily doses of a tablespoonful of saltpeter is of great service in reducing the fever.

The use of the steaming nose-bag, as used for horses during this disease, is of great benefit in producing an early and free discharge from the nostrils, and thus relieving the animal. If there is great depression, the first prescription may be repeated several times each day, until benefits are seen.

MALIGNANT CATARRH.

This disease is a malignant form of common catarrh, which affects cattle on low, wet lands, or during unfavorable circumstances, and which, to a very limited extent, may prove contagious among the same herd. All the symptoms are aggravated, there being more fever, more constitutional affection, greater congestion of the mucous membranes, followed by blotches around the muzzle, which may peel off, leaving raw sores which degenerate into ulcers about the fourth or sixth day. Swellings may occur on the jaw, limbs, or other portions of the body, which may slough off. Costiveness is followed by a putrid diarrhœa, and death results about the tenth day.

The treatment is the same as for the common attack, only more potent and oftener repeated. The mild laxative is to be given at the start, if the bowels are costive, the first prescription may be given every two hours if necessary, to allay pain and keep up the strength.

OTHER DISEASES.

Discharges from the nose, nasal gleet, sore throat, and other affections of these organs, can be treated precisely as they are directed in the department for the horse.

DISEASES OF STOMACH AND ABDOMEN.

BLOATING OR HOOVEN IN CATTLE.

Hooven or tympanitis, is a form of derangement which sometimes affects the first stomach, or paunch of ruminants. It consists of an evolution of gas in the paunch. When the quantity of food is greatest, the danger is most imminent. The symptoms are urgent, marked, and so easily recognized, that all fancy themselves competent to treat it. As occurring independently of other affections, it is not easily mistaken, and, unlike the distention from solid food, is mostly sudden in its attack. Cattle, when turned into pasture, or given some changed diet, will be observed to swell over the left side. The distention is elastic, and can scarcely be mistaken for over-distention with food. The animal, while this is occurring, may still continue feeding. At length, by pressure on the intestines, the opposite side becomes hooven, there is labored breathing, they stand with the nose pointed forward, and saliva dropping from the mouth; will frequently lie down, but as rapidly rise again; pulse small and imperceptible, anus and vagina protruded, while in some cases great drowsiness may be induced. It is very rapid in its progress, and may terminate in death in a few hours. This may occur from rupture of the diaphragm or of the stomach itself, or by pressure on the lungs and heart, causing suffocation.

The causes are generally to be found in the nature of the food taken into the stomach more than in the organ itself. It is not to the quantity but the quality that this is attributable. So sudden is it sometimes developed that it not unfrequently shows itself immediately following the first mouthful of certain kinds of food, as green clover or potatoes, while, when accustomed for a short time to the diet, such an action does not follow their reception. The paunch is temporarily deranged, and its action is suspended.

TREATMENT OF HOOVEN.

In the treatment of these cases, attention ought first to be directed to the restoration of the natural action of the stomach.

HOLSTEIN COW.

Many cases may be readily relieved, by driving the animal about; then suddenly dashing a considerable quantity of cold water over the loins, has, occasionally, a wonderful effect, acting in a manner precisely similar to a variety of other remedial agents, producing contractile movement in the paunch, the result of reflex nervous action. In all cases of emergency, the owner should not hesitate to puncture the rumen at sight. The operation is very simple, and when the proper instruments (the trochar and canula) are not at hand, the operation may be performed with a knife; to select a proper place to puncture the rumen, a line may be drawn from the last rib to the prominent part of the hip-bone, and from this line an equilateral triangle may be drawn with its apex downwards; where the two lines intersect one another is the proper place to operate. The great capacity of the rumen makes it almost impossible to make any mistake in puncturing its walls, particularly when inflated to its greatest dimensions from the generation of gases. It is not highly organized, and therefore the danger to be apprehended from inflammation need cause no anxiety. Administer the following medicine morning and evening:—

Hyposulphite of Soda, one-half ounce;
Extract Ginger, one-half fluid ounce;
Extract of Golden Seal, one-half fluid ounce;
Water, eight ounces.—Mix.

Feed nothing but scalded bran well seasoned with salt, until the cow is fully recovered.

OVERLOADED PAUNCH.

This differs from the preceding disease in being caused by an inordinate quantity of food, and not its quality. The overloading the paunch prevents its performing its office. Any kind of food will produce it, if taken in excess. It is slower of development than bloat, and while the left side is distended, it hangs more downward, and has not that drum-like sound on tapping it, which is found in true bloat. There is the same difficulty of breathing, oppression and stupor. If it is caused by green food, a diarrhœa sets in generally before death,

which may result in a spontaneous cure. Like results have come from vomiting, yet rarely. In its first stages give:—

Epsom Salts, one pound;
Glauber Salts, one pound;
Oil Turpentine, two fluid ounces;
Nux Vomica, one-half drachm.—Mix.

Repeat in six hours if no benefit is seen. The paunch may be punctured as in hooven, if the upper part of the abdomen sounds drum-like. The opening may be enlarged, even, and the contents removed, when it should be sewed and the animal fed on gruel for a few days. If the animal seems to be losing strength, give four drachms of carbonate of ammonia every three hours.

IMPACTION OF THIRD STOMACH — DRY MURRAIN — MAD STAGGERS.

This may be caused by a feverish condition of the system, or of the paunch, or a dry state of the contents of the manifolds of the third stomach. Its most prevalent cause is eating dry corn husks, bleached hay, or anything which demands extraordinary secretion of the fluids of the stomach for its digestion. Instead of digesting, it collects in hard dry lumps, which can be felt by pressing the right side with closed fist. The dung is scanty and hard, yet may have been preceded by a diarrhœa. The animal lies on the left side, with the head in the right flank. Paralysis, stupor, or convulsions may follow; or mad delirum, so wild, that the animal will dash straight ahead, bellowing fearfully, regardless of any obstacles, sometimes breaking its horns, etc. The first treatment, in the simpler forms, is to give a purgative, and as there is more or less inflammation, a quart of castor oil should be used. Repeat it in eight hours, if it does not move the bowels. If the strength of the animal seems to fail, give four drachms of carbonate of ammonia every three hours, accompanying it with an injection of a quart of warm water. If the strength is evidently on the wane when the disease is first discovered, better depend on injections to move the bowels, than to give purgatives by mouth. After the bowels move and there are improving symptoms, gruel and mashed boiled roots may be fed. If there is tenderness on

the right side, it may be blistered by combining mustard and turpentine. If the animal is delirious, fasten to a post and apply cold water or ice bags to his head. If it is evident that the stomach is inflamed, twenty grains of nux vomica may be given, three times daily, in gruel. The food should be entirely fluid, until all danger is past.

The practice among prairie farmers of turning their stock into corn fields after the corn has been gathered, to feed on the dry husks and stalks that are left standing as they grew, causes the death of many fine animals. Any one who loses a cow by feeding on dry fodder, will be convinced, if a post mortem examination is made, of the danger that is ever prevalent to the owner of stock which is allowed to feed in this volunteer manner. The stomachs will be found packed with hot, dry, hard mass of stalks and husks, which no remedy can reach or remove. Animals which die from eating this dry food suffer the greatest agony, expiring in convulsions.

INFLAMMATION OF THE BOWELS.

This disease may be caused by irritating and improper food, or the use of powerful purgatives. There are other causes, such as change of water and food, etc. It may take several forms. One, the hemorrhagic, in which the dung is passed in small balls, streaked with blood; the animal will suffer intense pain, dashing recklessly about in vain attempt to get relief. When it has been caused by eating poisonous plants, the back will be roached, the flanks tucked up, the urine high colored and often bloody. The mucus form of the disease will be shown by the balls of dung being streaked with mucus instead of blood, and while the first form generally proves fatal inside of twenty-four hours, if not relieved, this character of the disease may last a fortnight. There will be belching of gas, a fetid breath, and tenderness on the right side of abdomen. A diarrhœa may begin, which will work a cure, or may terminate in a fatal bloody discharge. Purgatives should not be given in either form of this disease, unless for the purpose of removing some acrid substance known to have been eaten. It is better to rely on copious laxative injections of warm soap suds. A quart of linseed oil is the best laxative to use in

this case. If there is considerable pain, two ounces of laudanum may be given by injection, or by mouth. In urgent cases, blankets wrung out in hot water, may be applied to the abdomen. All powerful purgatives should be avoided, as they add to the already existing inflammation. If the strength seems to fail, accompanied with the existing pain, give:—

Carbonate of Ammonia, four drachms;
Extract Belladonna, two drachms.—Mix.

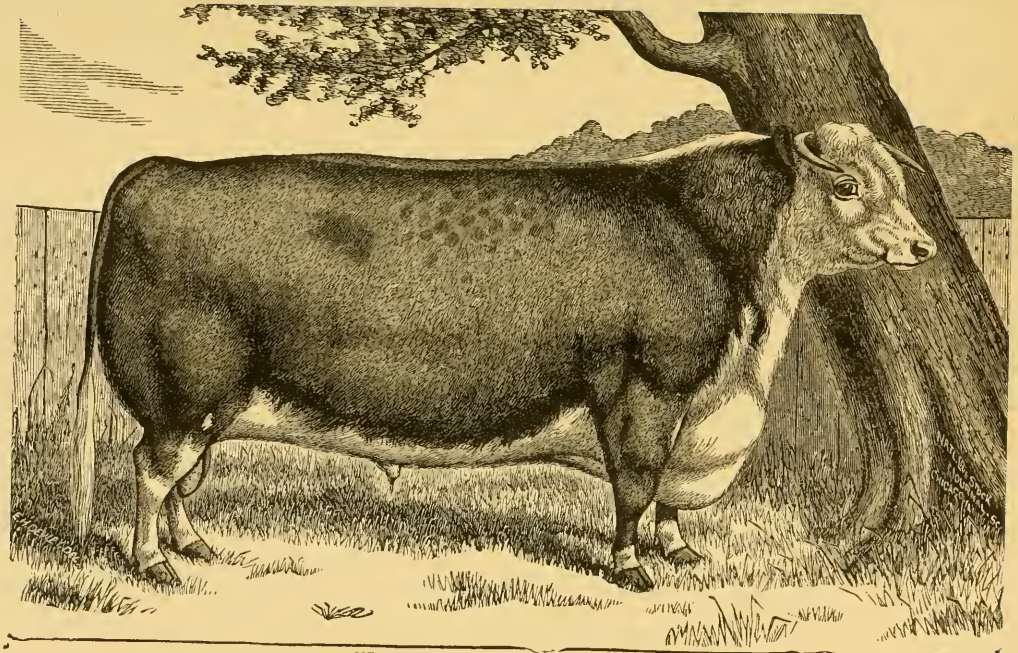
This may be given in warm gruel, every two hours, until benefits are seen. Soft food should be given during recovery for weeks.

DIARRHŒA — SCOURS.

It may be a symptom of some existing disease, which will stop when disease is removed, or it may be simple and uncomplicated, caused by eating improper food, or exposure. The best method of treatment is to remove all effete matter from the bowels by a laxative, consisting of a quart of linseed oil. If a more rapid evacuation is wanted, a pound of glauber salts may be substituted. After the physic has operated, feed starchy food, gruels, mashed roots, etc., for a few days, until the bowels have regained their tone. Astringents should not be used until the irritants have been removed, when they may be resorted to if the above treatment does not relieve the case. Two fluid drachms of tincture of kino may be given three times daily, until benefits are seen; or a tablespoonful of pulverized inner white oak bark may be substituted. Almost any form of this affection, except the chronic kind, can be checked, and perhaps cured, by administering a few doses of charcoal and lime water.

CHRONIC DIARRHŒA.

Chronic diarrhœa in cattle is generally due to a variety of causes, and one of the most common is an affection of the liver and mesenteric glands, of a tuberculous nature. Treatment of such cases generally proves unsatisfactory, because the normal functions of the absorbent glands cannot be restored; and though a temporary amelioration may be brought about, by judicious change of food an-



HEREFORD BULL SUCCESS.

tonic remedies, the diarrhœa is apt to reappear at any time, from the slightest cause, such as change of food, or the influence of cold and wet. We have often seen good temporary benefit derived from the use of ammoniated sulphate of copper, given in doses of one drachm, morning and evening, dissolved in a few ounces of water. Instead of gruel, mashes, roots and similar succulent food, the animal should be fed on good sweet upland hay, oil cake, and ground hay and oats. As a rule, it will be best to fatten the animal as soon as possible, and dispose of it. If the disease is so far advanced that no improvement of the animal's condition can be brought about by any method of feeding, it ought to be destroyed and buried, as the consumption of the flesh of such an animal would be dangerous to the health of hogs as well as of human beings.

DYSENTERY—BLOODY FLUX.

This is a more serious disease than diarrhœa, and may result in inflammation of the bowels, and a speedy death. It may take a chronic form, and the animal die from gradual emaciation. In its first stages the dung is semi-fluid and of bad odor; later, it is mere liquid, contains blood, and shreds of mucous membrane, and is intolerably offensive. The discharges are accompanied with painful straining, which becomes more intense and violent as the disease progresses, and may finally end in involuntary passing of the discharges. The appetite is gradually lost, the hair stares, the thirst is great, and fever is present. It is better in the commencement of the treatment to give a mild laxative, consisting of a quart of linseed oil, combined with two ounces of laudanum, if there is a good deal of pain. Give daily, after this has operated, three drachms of Dover's powders. If this does not bring the desired results, give the following twice each day:—

Pulverized inner bark White Oak, two ounces;
Oil of Turpentine, two fluid ounces;
Water, or Gruel, one quart.—Mix.

Great care must be taken in giving the food for a few weeks after recovery.

SCOURS IN CALVES.

This is merely a form of indigestion, which is generally produced by improper food of the young calf. Not giving it new milk, or forcing it to live on old skim or sour milk. It may also result from too high feeding, and forcing; or, it may result from keeping the animal in an improper and unhealthy pen. The symptoms are a vitiated appetite, ravenous or impaired, a bloated pot-belly, staring hair, fetid breath, and a whitish watery diarrhœa. The calf soon becomes emaciated and dies. The first thing to do is to administer two fluid ounces of castor oil, to which may be added a teaspoonful of laudanum. After this has operated, follow with the prescription below:—

Bismuth, two drachms;
Magnesia, two drachms;
Tincture of Kino, one drachm.—Mix.

This may be given in milk, and the food should be adapted to his wants, otherwise no benefits will be received.

When sucking calves are under treatment for diarrhœa, the mother should also have a few doses of the above remedy; for it often happens that she is ailing at the time, and her milk has a morbid tendency on the calf.

In the advanced stages, when the discharges emit a bad odor, and rumination is suspended, the patient should have a few quarts of milk porridge per day, or scalded milk alone, will sustain and benefit the calf.

SPASMODIC COLIC—BELLY ACHE.

Its cause is generally irritating substances in the intestines, or exposure to storms and succeeding neglect. It is a griping pain which affects the bowels and changes location. Its symptoms are shown by an uneasy shifting of the hind legs, a kicking of the upper one while lying down, twisting of the tail and moaning. Its duration is from one to two hours. Give at first, one pound of glauber salts dissolved in a pint of warm water; inject a quart of warm water, to which has been

added two fluid ounces of laudanum. The injection may be repeated in an hour, if the pain continues. If there is considerable nervous excitement, pain, and restlessness, give the following:—

Carbonate of Ammonia, four drachms;
Belladonna, two drachms;
Water, one pint.—Mix.

Blankets wrung out in hot water may be applied to the abdomen, and will aid in relieving the pain.

PERITONITIS — INFLAMMATION OF LINING OF ABDOMEN.

This is generally caused by a wound which punctures the walls of the abdomen. The symptoms resembles colic, while the right side will be especially tender, and the animal stands with all four feet near together. Hot fomentations must be applied externally to the abdomen, laudanum in two-ounce doses should be given to allay pain. If there is difficulty in the stomach's retaining the food, injections of gruel should be given. Three fluid ounces of sweet spirits of nitre should be given, twice each day, to prevent its resulting in dropsy, and as the animal gets better, give one drachm of iodide of potassium daily.

CHOKING WITH VARIOUS ARTICLES.

Cattle are the most liable of all animals to accidents of this kind, from neglect in cutting the roots on which they are fed to proper size. When the article is lodged in the upper part of the throat there is great distress, staring of the eyes, and rapid distention of the stomach from accumulation of gas, which may kill the animal inside of twenty minutes. Often the hand can be used to advantage in these cases, after the jaws have been properly secured apart. If it is beyond reach, a gag must be made of a two-inch wooden roller, which may be secured in the mouth by strings at each end, and tied back of the horns. This will prevent fatal distention of stomach, and often the object will pass down in a short time, in a natural way. If not, a probang, made out of a piece of new three-quarter inch rope, the ends of which have been untwined a few inches and tied back, forming a ball, may be used, and the object gently forced into the stomach.

In choking lower down, there is not so much urgency. The main symptoms are inability to swallow solid food, and the return of the fluids swallowed by way of mouth, often accompanied by nervous tremors and evident distress. The rope probang, mentioned above, is excellent here. No severe usage must be given, and care must be taken not to push so hard as to cause danger of rupture of the passage. When whips, rattans, etc., are used, this is especially to be feared.

When the choking is done by impacted food, fluids must be used to loosen and work the mass into a consistency to pass by piecemeal.

WORMS.

Cattle are not so liable as other domestic animals to be troubled with worms, yet calves may sometimes be prevented from thriving by their presence. The prescriptions given in the horse department will answer every purpose for treating these cases.

THE URINARY AND GENERATIVE ORGANS.

INFLAMMATION OF THE KIDNEYS.

Often this is the result of too free use of diuretic medicines, given ignorant of the bad effects which may follow. Eating poisonous plants or decayed food will produce it, exposure to storms soon after calving will often result in this disease.

The attack will commence with slight shivering, followed by increased heat of the body. The animal attempts to urinate frequently, the amount passed being small but high colored, and may be flecked with blood. A very good test for inflammation of the kidneys, is to apply pressure over the loins, which will cause the animal to shrink through tenderness of the parts. There will be stiffness of the hind legs, and the straddling gait always present during urinary disorders.

The first treatment is to give a purgative to counteract the tendency of the blood to the kidneys, combined with an anodyne to to relieve the pain, as follows:—

Castor Oil, one and one-half pints;
Laudanum, two fluid ounces.—Mix.

This may be repeated in six hours if it does not operate. At the same time inject three quarts of warm water into the rectum to aid the physic. The injection can be repeated several times a day, to which two ounces of laudanum may be added, if pain is present. Blankets wrung out in hot water may be applied to the loins for several hours, with benefit, followed by a blister over the part. Fluid food may be given until danger is past.

INFLAMMATION OF THE BLADDER.

The symptoms of this disease are a frequent passage of urine in small quantities, which generally contains shreds of mucous. There will be evident pain, a roaching back, twisting of tail, uneasiness of hind parts, and a straddling gait. There will be a slight fever. If the muscular coat of the bladder is involved it is more serious, as retention of urine may be present, which will have to be removed with a catheter. No diuretics must be given in the active stage of this disease. Castor oil may be given every six hours until the bowels move, which will relieve the urinary organs of much labor. Injections may be used as recommended for inflammation of the kidneys; hot water applications, also. If there is loss of strength, carbonate of ammonia in four-drachm doses, may be given every few hours.

Sometimes the disease is present in cows soon after calving, and is caused by costiveness, which can be relieved by the use of proper laxatives and soft food.

BLOODY URINE—RED WATER.

Real hematuria is rarely ever present in cattle, but this form, caused by cold pastures, wood pasturage of weeds, etc., is more frequent. It seems to be more of a constitutional disturbance than a local ailment. followed by a change in the character of the constituents of the blood.

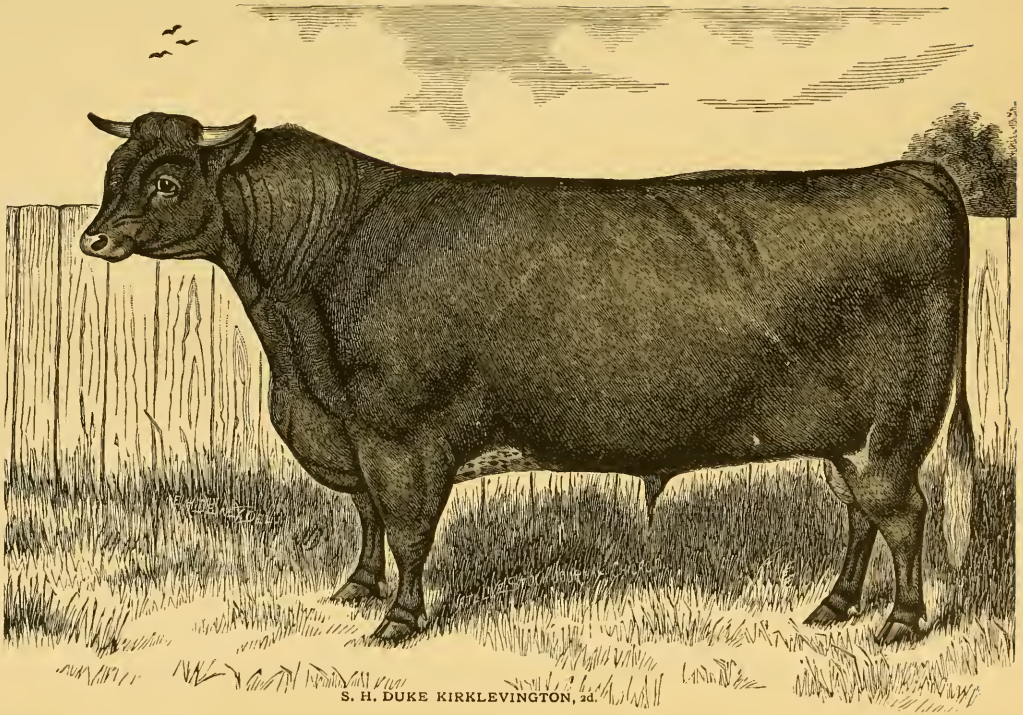
Its proper treatment consists in changing the food, if this has been the cause, and followed by the same treatment as for inflammation of the kidneys, commencing with a mild purgative, combined with anodynes if pain is present, followed by linseed tea as food, and mashes as the animal grows better.

ABORTION IN COWS.

This complaint is more frequent in the east than west, and is a scourge in some dairying districts in New York. The herding together of a large number of cows, high feeding, and crowded space will produce it. Smutty corn, ergoty pastures, etc., as well as injuries to the abdomen, are fruitful causes. One curious fact, not yet fully explained, is that when one animal in a herd aborts, others are likely to follow from sympathy or infectious nature of the disease.

When a case of abortion occurs, the cow should be separated from the herd, and all traces removed. It would be well to notice by observation the symptoms which threaten abortion, such as the animal coming in heat again, if it occurs early in gestation, or a whitish, purulent discharge from the vagina, followed in a few days by parturition in more advanced cases.

When a case of this kind has occurred, it is well to give all the well animals half an ounce of chlorate of potassa, daily. The sick animal is to be fed on cooling food, soft mashes, boiled and mashed roots, etc. If there is signs of weakness, four drachms of carbonate of ammonia may be given twice a day, three times, or oftener, if the case is more serious. Laudanum may be added if there is evident pain, and it is of great assistance in early stages to prevent its termination. In more advanced stages it may be necessary to remove the dead calf, which may sometimes be taken away piecemeal, by amputating the limbs, which may be done as follows. Our first object must be to remove the fore legs, or the hind legs, according to the position of the calf, and which is done by concealing a small knife in the palm of the hand, and making a deep incision from the fetlock to the shoulder, or from the fetlock to the stifle joint of the calf; the skin should then be separated from the leg by running the finger between the skin and



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muscles, when, by the application of some force, the whole of the leg can be pulled away; the other leg must now be served in the same manner, and ropes attached to the loose skin. We have thus gained a sufficient purchase by retaining the skin, and more room is given by the legs being removed. The next step will be to secure the head, and the bulk of the legs being removed, this object can often be accomplished, and the calf got away. Care should be taken, while using the knife within, not to injure the womb, as dangerous complications might then ensue. If the calf has been dead more than twenty-four hours, it will be proper to also remove the afterbirth, by carefully detaching the same. Afterwards the womb should be cleansed by lukewarm water injections, and subsequently a few injections of some disinfecting agent may be made, such as a mixture of one ounce of carbolic acid with a gallon of soft lukewarm water. The cow should be given plenty of gruel to drink, and be supported with nourishing food.

TREATMENT BEFORE AND AFTER CALVING.

The health and welfare of not only the cow, but her offspring, are greatly affected by the treatment during this period; soon before calving. A healthy cow, in rather lean flesh, will usually bring forth a healthy calf with greater certainty of both doing well, than one which is in high flesh. There is a mean of condition wherein a cow should be kept, that is, neither fat or lean, but in a thriving condition.

A poor, scraggy cow may have a good calf, but the odds are that the calf will exhibit the same lean raking appearance that the mother does. The after milking of the cow tells the same tale. Cows, previous to calving, should be well taken care of, to be kept thriving, and not be injured in any way by the jostling, etc., of other stock. Fretting, or worrying the cow, seriously influences not only the cow's good, but also has an injurious influence upon the disposition of the young she may bring forth.

A cow that gives milk up to near the time of calving is very apt to bring a lean calf, unless particularly well fed with rich food, and well sheltered and cared for. A good cow properly fed and cared for

will give milk to within four or five weeks of calving, and bring a good calf, but no cow fed on barley, or wheat straw, and kept shivering in the cold, or with half enough to drink, will give milk up to near calving, and bring a good calf.

To facilitate the parturition of cows, the administration of a few handfuls of linseed with their drink for three or four weeks before calving, is found to act beneficially, and moreover, it increases the secretion of milk, decreases inflammation and constipation, and forms a certain remedy in retention of afterbirth.

She should certainly be relieved of the afterbirth, if she does not void it in three or four days, else it decomposes, and produces a low, feverish condition of the system, affecting the general health of the animal. The hand may be introduced, and by pulling gently in various directions, it will soon yield and come away.

It is well to give a cow, immediately after calving, a warm bran mash, or warm oatmeal gruel. Two or three hours afterward, give a drink consisting of two tablespoonsful of ginger in warm water. This tends to prevent milk fever and garget; it also aids in the cleansing process. We have seen some farmers feed cows that did not cleanse promptly, some boiled oats fed in the liquor, warm.

MILK OR PARTURITION FEVER.

This generally attacks thriving, plethoric cows who are good feeders and digest all they eat. It is generally caused by high feeding before and after calving, running in luxuriant pastures during hot weather. It results in a feverish condition of the system, an inflamatory condition of the brain, congestion of parts, and a complete stoppage of discharges of urine or dung. In the later stages a state of stupor supervenes in which all feeling is lost.

Prevention is better and more successful than the cure, and care should be taken that cows of this habit should be sparingly fed for at least three weeks before calving and longer afterwards. A dose of one pound of Epsom salts should also be given such a cow directly after calving, but to none others.

When the attack first begins, and the pulse is full and bounding,

taking four quarts of blood from the jugular vein will assist, but adds to the trouble if it has got to the point where the animal is down and cannot get up, and the pulse feeble. In this case two pounds of Epsom salts should be given at once, then follow with this prescription every four hours:—

Carbonate of Ammonia, four drachms;
Nux Vomica, one scruple;
Water, one pint.—Mix.

If the fever is high, envelop the cow in sheets wet with cold water, and covered with dry blankets; apply to the head applications of ice or cold water, and have the legs thoroughly rubbed. The milk should be drawn often. It is only by extra efforts that success can be obtained, and the efforts must not be slackened.

INFLAMMATION OF THE WOMB.

This may be caused by difficult calving, lacerations of the womb, or improper removal of the afterbirth. Its symptoms will be ushered in by shivering fits, colicky pains, uneasiness of the hind parts, twisting of tail, looking toward flank, roached back, frequent straining, and a red and inflamed appearance of the entrance to the vagina. If the hand is introduced, the womb will be found dilated with fluid, which must be withdrawn with a catheter, or small rubber tube, followed by injections, by use of same tube, of warm water to cleanse the womb, and then an injection of a pint of warm water, to which has been added a teaspoonful of solution of carbolic acid. If the cow is feverish and not weak, she should have a purgative of one pound of sulphate of soda; if on the contrary she is deficient in strength, injections may be used, and four drachms of carbonate of ammonia should be given two to four times each day, and twenty drops of tincture of aconite every three to four hours, to allay fever. Repeat the injections into the womb of warm water and carbolic acid solution daily, for two to four days.

BLOODY MILK.

Injuries to bag may cause it by local inflammation. Some cows show signs of it during heat, especially if they are very excitable.

Eating certain plants in wood pastures will produce it. Its cure from eating is to change the food; from heat or excitement, cooling food, confinement and saline purgatives; from local injuries, there is no better remedy than plenty of cold water applied several times daily, and careful tender milking.

GARGET — MAMMITIS.

May be caused by local injuries, too great supply of milk-producing food which unduly distends the bag, irregular and neglect of milking, resulting in local congestion. The bag may be badly caked, or only a hard lump felt in center; there may be no great amount of inflammation, yet there will be found lumps of clotted matter which are more or less bloody, and may become offensive.

Cold water applications where there is local heat will be of benefit. A cooling lotion, consisting of a teaspoonful of sugar of lead in a quart of water is excellent. An active hand-rubbing of the bag three or four times daily, will aid in dispelling the swelling. Internally give a tablespoonful of saltpeter twice daily; or, give a tablespoonful of grated poke root, twice each day. Iodide of potassium in drachm doses, once a day, is excellent. In some cases, where there is much swelling of the bag and constitutional disturbance, warm fomentations should be applied constantly, and at night a poultice of hops steeped in equal parts of water and vinegar may be applied by use of cloths, cutting holes for the teats, and tying up over the back. Twenty drops of aconite may be given every four hours to allay fever. The milk must be drawn off frequently, and if painful, a milking tube must be used to allow it to run out. If the fluid has a bad odor, a very weak solution of carbolic acid and water may be injected into the bag and then withdrawn. Feed soft food and give half an ounce of powdered gentian if strength is failing.

MILK STOPPAGE — OBSTRUCTION IN TEAT.

The cavity in the teat is separated from a cavity in the udder just above by a sort of diaphragm, which has a small hole in its center. This hole in the living subject is about the size of a pea, but sometimes smaller, and around its edge is a small bundle of very fine

elastic fibers, which are covered with the membrane lining the adjacent cavities. This bundle of fibers forms a ring or cord, by the contraction of which, the aperture, between milkings, is kept closed, and the passage of milk shut off. There are multitudes of very small cavities, all through the udder, in which between milkings, the bulk of the milk is held and its weight kept from pressing down upon the teat. The outlet of each of these little reservoirs, for such they really are, is provided with a diaphragm, which is punctured and closed in the same way as the reservoir.

The cord of elastic fibers surrounding the apertures in all the diaphragms, large or small, are, by a connection with the abdominal muscles, more or less under the control of the will, and do a duty precisely analagous to the muscular bands surrounding the neck of the bladder. When the cow desires to be relieved of her milk, as at milking time, or when her calf is sucking, she releases this cord, when the apertures open and the milk flows down rapidly into the teat. All the reservoirs, large and small, are liable, from clotted milk or severe swelling, to become closed, and the milk partly or wholly prevented from passing along. The cord surrounding the hole at the top of the teat sometimes permanently contracts and fills up, and becomes rigid, when the cow loses control and is unable to relax it, and milk can only be obtained by pressing on the cavity above and forcing it through the closed hole to fill the teat. This is the cause of the stoppage in question, which so often occasions the loss of valuable cows by permanently drying up one or more quarters of the udder.

The cause of this contraction, rigidity, and knotting up, is usually chronic inflammation, oftener than otherwise induced by a too free use of rich or heating food before parturition, such as corn meal, cotton-seed, or oil meal, too much grass, or other milk-producing food.

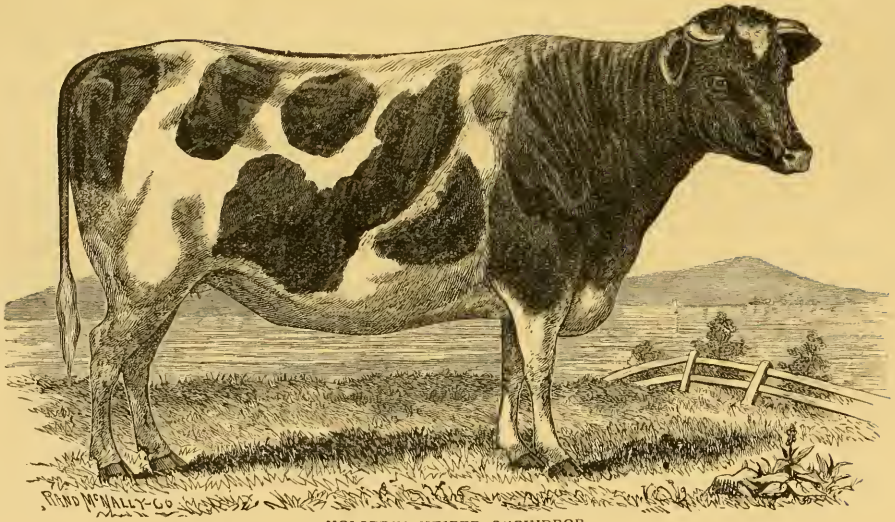
The particular manner of milking has also something to do with the stoppage. If, while the bag is inflamed, the milker jerks or pulls down hard upon the teat, the tendency, as will be readily seen, is to increase the irritation in the parts over the teat, and thereby to increase the contraction and rigidity of the cord, closing the passage. Bad milking very much aggravates the matter, but chronic inflamma-

tion first originates the tendency to the difficulty. Care should always be taken by judicious feed and milking to keep bags, especially of heifers and young cows, soft and pliable till the milk begins to flow pretty freely, when they will generally take care of themselves. The remedy consists in cutting or stretching the contracted cord.

When the stoppage was very close we have sometimes successfully used a cutting instrument, made by taking a piece of steel wire or a large steel knitting-needle, and flattening a spot half an inch from one end and making both edges sharp. By passing this up the teat through a quill or tube to prevent cutting the orifice of the teat, it can be pushed through the closed aperture, and cut the constricted cord on opposite sides, turning it a quarter of the way round, it will cut it again at right angles when it is withdrawn, making a sufficient opening for the milk to flow. But unless some means is employed to prevent, the lacerated hole will often soon grow up tighter than before. To obviate this, by whatever means the hole is opened, a plug of hard rubber, of a length suited to the length of the teat, should be inserted and left in the teat between the milkings for a few days till the wound heals up, and the size of the hole becomes adapted, as it soon will, to the size of the plug, when it may be safely left out. The plug need not be over one-third of an inch in the largest part, and should be well oiled before using. If taken in season, the stoppage may be permanently and sufficiently enlarged by using the plug alone a few days at a time.

TO PREVENT LEAKING OF MILK.

Immediately after milking, wipe the teat dry, and with a small brush apply to its end a small quantity of collodion that may be had at the druggist's. This at once forms a thin, tough membrane or skin which will prevent leakage, and is easily removed before milking. Or, take white oak bark, put it into water, boil it down to a strong solution; then, after every milking, soak the ends of the leaky teat or teats in the solution for a few minutes, and prevention is said to be sure.



HOLSTEIN HEIFER SNOWDROP.

SORE TEATS — WARTS.

Sore teats are often caused by washing in the first milk drawn, leaving the teats damp or wet when driven from the barn to outdoors, causing chapping, cracking and extensive sores. The teats should be thoroughly dried, if there is a tendency to crack, oiling with castor oil thoroughly is an excellent and very adhesive remedy. Glycerine is an excellent remedy, combined with a little sugar of lead, but from its affinity for water does not remain on. Gentle milking, and in bad cases the use of milking tubes must be used.

Warts may be removed by the knife or caustics.

CASTRATING CALVES.

First grasp the scrotum in the left hand, and bring the testicles down to the foot of the bag; then with the other hand, and a sharp small knife, cut a perpendicular slit in the back side of the bag, in the rear of each testicle, close to the bottom, and long enough for the testicle to pass through; cut through the skin and the case enclosing the testicle; push it out and gently draw it, and its attaching cord, out from one to two inches and cut it off, and the work is done; serve the other the same way. Insert a little salted grease and the job is finished. If the outside is washed with water in which half a teaspoonful of carbolic acid has been added, it will prevent flies from troubling in warm weather. If the weather is cold and stormy the calf should be kept indoors for a few days. If the bag becomes inflamed and swollen, and matter gathers inside, an incision must be made to release it—when it will heal. Castrating bulls is to be done in the same manner, but is attended with more danger to the animal.

CHAPTER III.

CONTAGIOUS, INFECTIOUS, AND MISCELLANEOUS DISEASES.

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CONTAGIOUS AND INFECTIOUS DISEASES.—Texan Fever, and its mode of contagion and prevention—Pleuro-Pneumonia, or Contagious Inflammation of the Lungs and its prevention and treatment—Malignant Anthrax—Black Leg—Black Tongue—Bloody Murrain—Their causes and cure—Foot and Mouth Disease, and its remedies—Epidemic Ophthalmia and its cure.

MISCELLANEOUS MATTERS.—Spaying Cows—To prevent cows kicking—The Herkimer method—Destroying Lice on Cattle—Grubs in the skin—Breaking Sucking Cows—To remove articles from the eyes, etc.

CONTAGIOUS AND INFECTIOUS DISEASES.

TEXAN FEVER.

This is a disease which was prevalent for a year or so in the northern states, caused by the presence of Texas cattle. The Texas cattle are not, probably, affected by the disease in Texas. Cattle taken from the north to the central and southern parts of Texas die of the disease, and a similar disease is common among the horses in Texas. Texas cattle brought north, either by water or rail, or driven on foot may communicate the disease to native cattle. Texas cattle

do have the disease, and die from it, in the north, but much more rarely than do native cattle. Old native cattle are much more susceptible to the disease than the young ones. Comparatively few suckling calves die from it; in some cases calves drew milk from the cows until the death of the latter, but still did not take the disease. Unless in very rare instances, the disease has not been communicated to native cattle kept in enclosures in which Texas cattle had not been. Eating where Texas cattle have grazed, drinking where they have drank, or at least, passing over the ground where they have been driven, seems necessary to communicate the disease to native cattle, although apparent exceptional cases have been known. There is scarcely a doubt that severe frosts remove danger of communication of the disease, and that after Texas cattle have been wintered in northern states they will not communicate the disease. In very rare cases, if at all, have native cattle communicated the disease to others. Generally no evil effects are known to have followed the use of the milk or flesh of the diseased cattle.

In the first place the general aspect of the sick ox or cow is peculiar. With drooping head, arched neck, hollow flanks, dull-looking or staring coat, there is an appearance of great dejection. The pulse is frequent, sometimes full, and at others is thready; during the latter stages of the disease it is frequent, and so small as not to be easily taken at the jaw. The secretions are checked, with the exceptions of some glairy mucus from the nose and very high colored urine, which is often retained in great abundance and for some length of time in the over-distended bladder. The secretion of of milk is suspended in cows from the earliest stages. There is costiveness, but this is readily overcome by medicine, and even by special diet. The breathing is usually frequent and sometimes panting. The temperature of the body rises to 107°, 108°, and 109° Fahrenheit, and nothing is more remarkable than the early and very marked elevation of animal heat. Of all the symptoms none are more remarkable than the trembling and twitchings of muscles and the unsteady gait of the affected animals. In the advanced stages of the disease, when the ox or cow lies down, there is difficulty in rising

from partial paralysis of the hind quarters; and the first indication of this interference with the functions of the hind limbs is their being drawn slightly under the belly, and the fetlock joints slightly bent as in other acute diseases of cattle. But the partial paralysis sometimes involves the fore legs. We have been told of some patients manifesting signs of delirium. The animals die usually in from three days to a week.

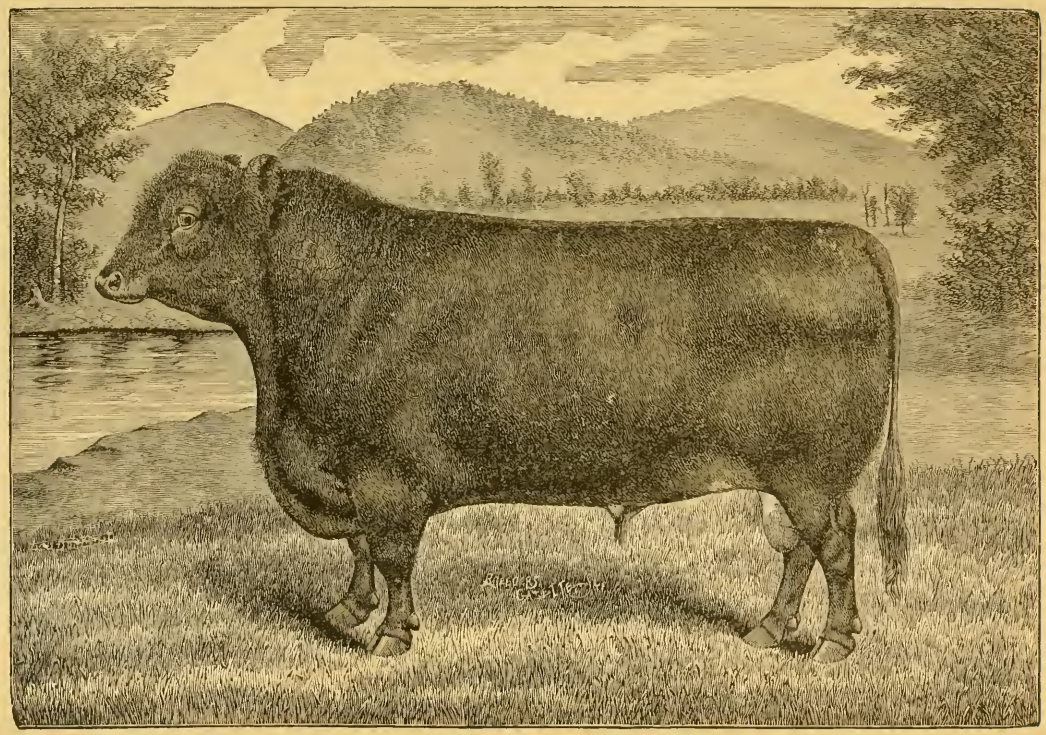
In the treatment, prevention is more reliable than the cure. If it is known that the herd has been exposed, a disinfectant treatment, consisting of one drachm of solution of carbolic acid, should be given in a mash every morning for three days. The cattle should be removed from the affected spot, and those which show symptoms of disease separated from the rest. After the disease has really developed, the following will be as good as can be given:—

Chlorate of Potash, two drachms;
Carbonate of Ammonia, three drachms·
Nux Vomica, twenty grains
Water, one quart.—Mix.

This may be given every three hours in urgent cases, and the time gradually extended between doses. In ordinary cases three times per day will be sufficient. Medicines can be given in bran mash if the animal will eat. No solid food must be given for two weeks after the animal has begun to recover.

PLEURO-PNEUMONIA — CONTAGIOUS INFLAMMATION OF LUNGS.

This is a specific and contagious lung disease of cattle, which is generally, if not always, introduced into a country by importation. In this disease prevention is better than cure, and the sacrifice of a whole herd which has become infected, is the only way to stamp it out. The disease already exists in some of the eastern states, having been imported. The treatment is very unsatisfactory, yet cases have been cured by the same course of treatment recommended for Texan fever. When it once gets into a herd, it will attack all of them generally.



JUDGE 1150. Winner of the Grand Gold Medal, Paris Exposition, 1878.

(Owned at Goodwin Park Stock Farm, Beloit, Kansas.)

CONTAGIOUS PLEURO-PNEUMONIA.

Our farmers and stockmen do not realize the immense importance of preventive measures by legislation, as a means of stopping the farther spread of this fatal malady. We give below a history of its course in this country, as well as other facts, from the pen of Prof. Law, of Cornell University, N. Y.

After reciting the history of the malady in the Old World, in which the statement is made that Great Britain alone has lost not less than $10,000,000 per annum by the ravages of the disease since the year 1842, the following brief history of its invasion and continuous existence in this country is given:

"Into Brooklyn, Long Island (New York), it was introduced in 1843 in the system of a ship cow, purchased by Peter Dunn from the captain of an English vessel. From Dunn's herd it spread to others adjacent and speedily infected the whole west end of the island, as will be noticed later at greater length.

"Into Massachusetts the plague was introduced on the 23d of July, 1859, in the bodies of four Dutch cows, imported by Winthrop W. Chenery, of Belmont, near Boston. These cows were procured from Purmerend and the Beemster, and were kept in stables for several days at the port of Rotterdam, an infected city, before being put on board the vessel. They were shipped April 6, passed forty-seven days at sea, and were ill during the last twenty days one of the number having been unable to stand. On landing, two were able to walk to the farm, while the other two had to be carried in wagons. The worst cow was killed May 31, and the second died June 2; the third did well till June 20, when she was severely attacked and died in ten days; the fourth recovered. On August 20 another cow, imported in 1852, sickened and died in a few days, and others followed in rapid succession. In the first week of September, Mr. Chenery isolated his herd, and declined all offers to purchase, being now convinced that he was dealing with the contagious pleuro-pneumonia of Europe.

"Unfortunately, on June 23, he had sold three calves to Curtis Stoddard, of North Brookfield, Worcester County, one of which was

noticed to be sick on the way to Curtis' farm. Several days later Leonard Stoddard (father of Curtis) took this calf to his farm to cure it, and kept in his barn with forty cattle for four days, when he returned it to his son. It died August 20. Curtis Stoddard lost no more until November 1, when he sold eleven young cattle to as many different purchasers, and wherever these went the disease was developed. In one case more than 200 cattle were infected by one of these Stoddard heifers. Of the nine cattle which he retained seven were killed and found to be badly diseased.

"An ox of L. Stoddard's sickened two weeks after he had returned the diseased calf to his son, and soon died. Two weeks later a second was taken sick and died; then a dozen in rapid succession. From this herd were affected those of the following: Messrs. Needham, Woods, Olmsted, and Huntingdon. Olmsted sold a yoke of oxen to Doane, who lent them to assist with twenty-three yoke of cattle in removing a building in North Brookfield. These belonged to eleven different herds, all of which were thereby infected.

"This will suffice to show how the disease was disseminated. In the next four years it was found in herds in the following towns: Milton, Dorchester, Quincy, Lincoln, Ashby, Roxborough, Lexington, Waltham, Hingham, East Marshfield, Sherborn, Dover, Halliston, Ashland, Natick, Northborough, Chelmsford, Dedham, and Nahant, and on Deer Island.

"By the spring of 1860 the State had been aroused to its danger, and in April an act was passed "to provide for the extirpation of the disease called pleuro-pneumonia among cattle," which empowered the commissioners to kill all cattle in herds where the disease was known or expected to exist. With various intervals this and succeeding commissions were kept in existence for six years, and the last remnants of the plague having been extinguished, the last resigned definitely in 1866. The records show that 1,164 cattle were slaughtered by orders of the commissioners, in addition to others disposed of by the selectmen of the different towns in 1863, when the commission was temporarily suspended. The money disbursed by the State was $67,511.07, and by the infected towns $10,000, making a grand total of $77,511.07,

in addition to all losses by deaths from the plague, depreciations, etc. Dr. E. F. Thayer, Newtown, was the professional commissioner who brought this work to a successful end.

"An importation into New Jersey in 1847 is recorded, to check which the importer, Mr. Richardson, is said to have slaughtered his whole herd, valued at $10,000, for the good of the State. Unfortunately, all New Jersey men were not so public-spirited, and subsequently importations from New York and mayhap also from Europe have since spread the pestilence widely over the State. From New Jersey it spread to Pennsylvania and Delaware, and thence to Maryland, District of Columbia, and Virginia, in all of which it still prevails.

"Of the progress of the disease southward from New York the records are somewhat imperfect, yet sufficient to show a steady advance. Robert Jennings records its existence in Camden and Gloucester Counties, New Jersey, in 1859, and its introduction into Philadelphia in 1860. It spread to "The Neck," in the southern part of the county, killing from 30 to 50 per cent. of infected herds, and spread in 1861 into Delaware and into Burlington County, New Jersey. In 1868 Mr. Martin Goldsborough assured Professor Gamgee of the extensive prevalence of the disease in Maryland, infection having been introduced by cattle from the Philadelphia market. The professor personally traced the disease in New Jersey, Pennsylvania, Maryland, District of Columbia and Virginia, and makes the following assertions:

"That the lung plague in cattle exists on Long Island, where it has prevailed for many years; that it is not uncommon in New Jersey; has at various times existed in New York State; continues to be very prevalent in several counties of Pennsylvania, especially in Delaware and Bucks; has injured the farmers of Maryland, the dairymen around Washington, D. C., and has penetrated into Virginia."

"He adds a table compiled by Mr. G. Reid, Ingleside farm, Washington, D. C., showing that in an average of 471 cows, kept in Washington and vicinity, 198 had died of lung plague since its introduction; 39 head perished in 1868 and 16 in 1869, up to date of report."

"More recently illustrations of the existence of the disease in these States have been frequent, and among comparatively recent

cases the author has been consulted concerning a high class Jersey herd near Burlington, N. J., in 1877, and a herd of imported Ayrshires in Staten Island later in the same year."

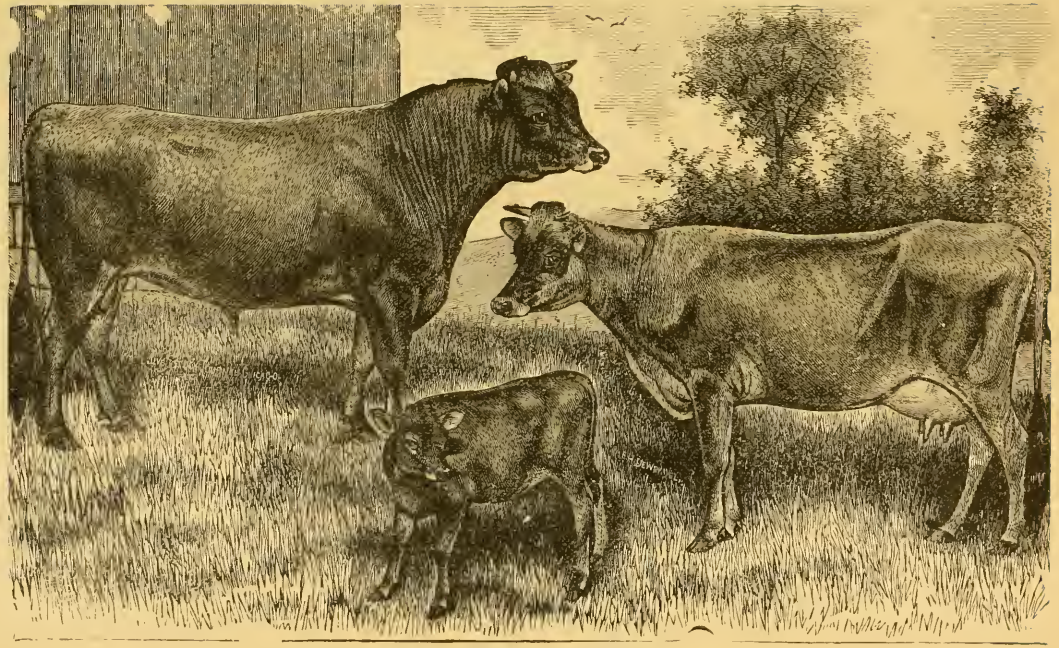
"In 1878, the town of Clinton, N. J., was invaded, the infection coming through a cow that had strayed for some days in New York City. This was alleged to be an Ohio cow, but had strayed long enough in New York to have contracted the affection."

After showing that the disease is a purely contagious malady, and cannot arise *spontaneously*, Dr. Law gives the following brief history of the introduction, progress, and continual presence of the affection since its introduction among the cattle in and near the city of New York.

"The first cow was introduced from England, on the ship Washington, in 1843, and was purchased by Peter Dunn, a milkman, who kept his cows in a stable near South Ferry. This cow soon sickened and died, and infected the rest of the cows. From this the disease was speedily conveyed into the great distillery stables of John D. Minton, at the foot of Fourth street, and into the Skillman-street stables, Brooklyn, through which my informant, Fletcher, showed the Massachusetts commission in 1862. In this long period of nineteen years, the plague had prevailed uninterruptedly in the Skillman-street stables, and the commissioner reported that they "found some sick with the acute disease," and having killed and examined one in the last stages of the affection, stated that it showed a typical case of the same malady which existed in Massachusetts.

"As dealers found it profitable to purchase cheap cows out of infected herds, and retail them at a round price, the malady was soon spread over Brooklyn and New York City. One or two cases will enable us to trace one unbroken chain of infected cows down to the present time.

"In 1849, William Meakim, of Bushwick, Long Island (New York), kept a large dairy, and employed a man with a yoke of oxen in drawing grain from the New York and Brooklyn distilleries. A milkman on the way, who had lung fever in his herd, persuaded the man to use his oxen in drawing a dead cow out of his stable. Soon after the



GROUP OF JERSEYS.

oxen sickened and died; and the disease extending to his dairy cows, Mr. Meakim lost forty head in the short space of three months. The stables having thus become infected, Mr. Meakim continued to lose from six to ten cows yearly for the succeeding twenty years, or as long as he kept in the milk business. This, which is but one instance out of a hundred, covers fifteen years of the plague in the Skillman stables, and brings the record down to 1869. It will be observed that this was the first occurrence of any such sickness in Mr. Meakim's herd; it commenced, not among the cows cooped up in hot buildings and heavily fed on swill, but in the oxen that were almost constantly in the open air, but which had been brought in contact with a dead and infected cow; the infection of the cows followed, and for twenty long years no fresh cow could be brought into these stables with impunity.

"Dr. Bothgate, Fordham avenue and Seventeenth street, New York, informed us that twenty years ago (1859) his father kept a herd of Jerseys, which contracted the disease by exposure to sick animals, and that all efforts to get rid of it failed, until when, several years later, the barns were burned down. The devouring element secured what the skill of the owner had failed to accomplish—a thorough disinfection.

"For some time so prevalent was the disease that Dr. Bothgate did not dare to turn his cattle out in the fields, lest they should be infected by contact with cattle over the fence. Since the period of the infection of his own herd, he knows that the pestilence has been constantly in many of the dairies around him. This bridges over the time from the Skillman-street and Meakim cases down to the present day.

Twenty years ago (1859) Mr. Benjamin Albertson, Queens, Queens County, Long Island (New York), purchased four cows out of a Herkimer County herd which had got belated and had been kept over night in a stable in Sixth street, New York, where the cattle market then was. These cows sickened with lung fever and infected his large herd of 100 head, 25 of which died in rapid succession and 19 more slowly. He was left with but 60 head out of a herd, after the pur-

chase of the four, of 104 animals, and honorably declined to sell the survivors at high prices to his unsuspecting neighbors, but sold a number at half price to a Brooklyn milkman, who already had the disease in his herd and knew all the circumstances.

"Twelve years ago (1867) Lawrence Ansert, Broadway and Ridge Street, Astoria, (New York), bought of a dealer two cows, which soon after sickened and died, and infected the remainder of his herd of 18. Eight of them died of the disease, and he fattened and killed the remaining ten, and began anew with fresh premises and stock. He has lost none since."

"The next case, like the last, affords a most instructive contrast to the first two, as showing how the disease may be permanently eradicated by proper seclusion. In 1872, Frank Devine, of Old Farm-House Hotel, West Chester, purchased from a dealer a cow which soon sickened and died. The disease extended to the rest of his herd, and in seven months he lost thirty-six cows. He appreciated the danger of contagion, and began again with new stock, keeping them rigidly apart from the infected beasts and premises, and from that time onward avoided all dealers and bred his own stock, with the happy result that in the last six years he had not had a single case of lung fever in his herd."

The virulence and infectious nature of the disease does not seem to have been lessened by its transplantation to this country. Many instances are given which show conclusively that it is equally as fatal to-day in those localities in the United States in which it exists as it is in its home in the far east, or in those nations of Europe which it has invaded.

"No one who has studied the plague in Europe can truthfully claim that it is less infectious here than in the Old World. What misleads many is, that during the cooler season many of the cases assume a sub-acute type, and others subside into a chronic form with a mass of infecting material (dead lung) encysted in the chest, but unattended by acute symptoms. But this feature of the disease renders it incomparably more insidious and dangerous than in countries where the symptoms are so much more severe, that even the owners

are roused at once to measures of prevention. In moderating the violence of its action, the disease does not part with its infecting qualities, but only diffuses them the more subtilely in proportion as its true nature is liable to be overlooked. A main reason why unobservant people fail at first sight to see that the lung fever is contagious is, that the seeds lie so long dormant in the system. A beast purchased in October passes a bad winter, and dies in February, after having infected several others. She has had a *long period of incubation*, and when the disease supervenes actively, she has passed through a chronic form of illness, so that when others sicken, people fail to connect the new cases with the infected purchase. Then, again, in an ordinary herd of 10 or 20 head the deaths do not follow in rapid succession, but at intervals of a fortnight, a month, or even more, and those unacquainted with the nature of the disease suppose that it cannot be infectious, or all would be prostrated at once."

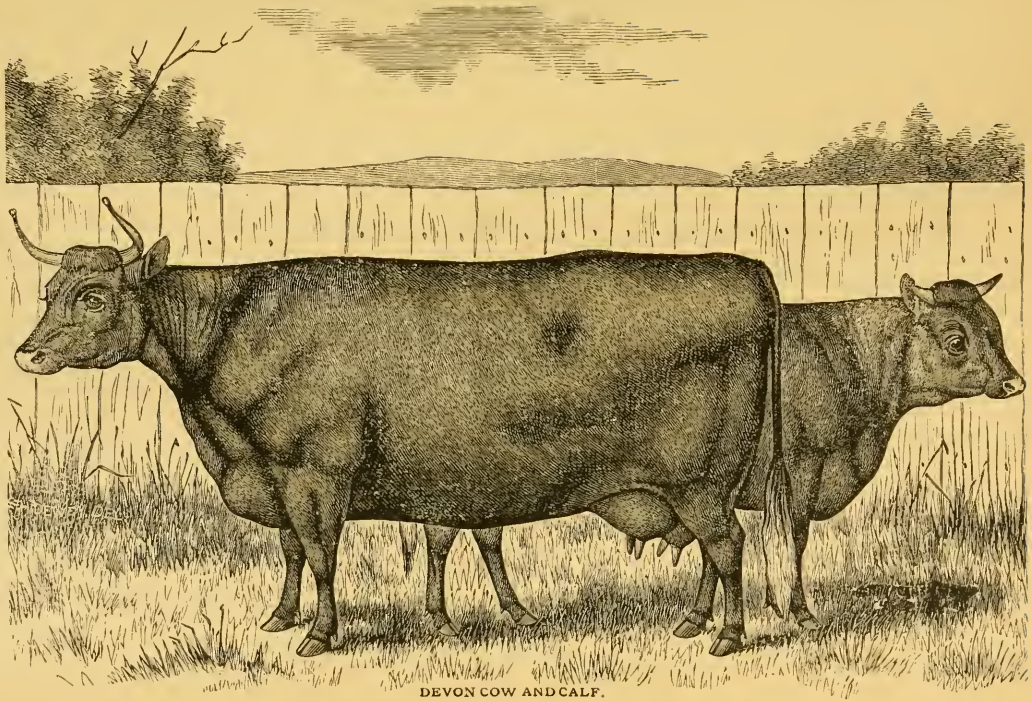
The disease may be communicated by immediate contact, through the atmosphere for some considerable distance, by the inhalation of pulmonary exudation when placed in the nostrils, from impregnated clothing of attendants, through infected buildings, infected manure, infected pastures, infected fodder, etc. Healthy cattle have been contaminated after being lodged in stables that were occupied by diseased ones three or four months previously. Hay spoiled by sick cattle has induced the disease after a long period, and pastures grazed upon three months before have infected healthy stock. The flesh of diseased animals has also conveyed the malady; and it is recorded by Fleming that the contagion from cattle buried in the ground infected others 50 or 60 feet distant.

There seems to be much difference of opinion with regard to the power of the virus to resist ordinary destructive influences. Under ordinary circumstances, it will be preserved longest where it has been dried up and covered from the free access of the air. In close stables and buildings having rotten wood-work, or deep dust-filled cracks in the masonry, and in those with a closed space beneath a wooden floo , it clings with the greatest tenacity. Again, in buildings which contain piles of lumber, litter, hay, fodder, or clothing, the virus is covered

up, secreted, and preserved for a much longer period than if left quite empty. In such cases it is preserved as it is in wooden or other textile fabrics when carried from place to place in the clothing of human beings. As carried through the air the distance at which the virus retains its infecting properties varies much with varying conditions. Dr. Law states that he has seen a sick herd separated from a healthy one by not more than fifteen yards and a moderately close board fence of 7 feet high, and in the absence of all intercommunication of attendants, the exposed herd kept perfectly sound for six months in succession. At other times infection will take place at much greater distances without any known means of conveyance on solid objects. Röll quotes 50 to 100 feet, while others claim to have known infection transmitted a distance of from 200 to 300 feet. But the author questions whether, in such cases, the virus had not been dried up on light objects, like feathers, paper, straw, or hay, which could be borne on the wind.

Because the lesions are concentrated in the lungs, and begin with cloudiness and swelling of the smaller air tubes and surrounding connective tissues, the presumption is favored that the virus is usually taken in with the air breathed. Its progress and the results of all attempts at inoculation would seem to confirm this. The exudation into the interlobular tissue, the congestion of the lung tissue itself, and the implication of the lung covering, are regarded as secondary phenomena, or, in other words, the disease begins where the inspired air must lodge the germs. The inoculation of the virulent lung products on distant parts of the body transfers the seat of the disease to the point inoculated, and in such cases the lesions of the lungs are not observed, or at least are not greatly marked.

A diseased animal is more likely to infect a healthy one at that period when the fever runs highest and the lung is being loaded with the morbid exudation. Proof appears to be wanting as to the infecting nature of the affection during the incubation stage, but it must not be inferred that with the subsidence of the fever the danger is removed. It is a matter of frequent observation that animals which have passed through the fever, and are again thriving well and giving a free supply



DEVON COW AND CALF.

of milk, and to ordinary observers appear in perfect health, retain the power of transmitting the disease to others. This may continue for three, six, nine, twelve, or, according to some, even fifteen months after all signs of acute illness have disappeared.

The number of animals infected by contact or exposure to the contagion is somewhat irregular, as is also the virulence and fatality of the disease. The French commission of 1849 found that of 20 healthy animals exposed to infection 16 contracted the disease, 10 of them severely. Dr. Lindley gives examples from his South African experience in which whole herds of 80, 130, and even of several hundred died without exception, showing that in warm climates the mortality is greatest. Dr. Law found the disease much more virulent and fatal during the hot summer months in New York, and says that during the winter season it is far less violent in its manifestations, and a great number of animals resist it.

Lung plague (pleuro-pneumonia) confines its ravages entirely to the bovine genus, and no race, breed, or age is exempt from its attacks. Sex gives no immunity; bulls suffer as much as cows; and oxen and calves, if equally exposed, furnish no fewer victims than bulls and cows.

As in rinderpest, measles, scarlatina, and the different forms of variola, an animal once afflicted with lung plague is usually exempt or impervious to a second attack. Only occasional instances are given where an animal has suffered from a second attack. The losses caused by the plague ranges all the way from 2 to 63 per cent. of all the animals in the country or locality in which it prevails, the losses varying according to climate, surroundings, condition of stock, etc.

The period of latency, that is, the time that elapses between the receiving of the germs into the system and the manifestation of the first symptoms of the disease, varies greatly. Veterinarians differ as to their experience and statements, and set this period at from five days to three months. Dr. Law has seen cases in which cattle have passed three or four months after the purchase in poor health, yet without cough or any other diagnostic symptom, and at the end of that time have shown all the symptoms of the lung plague. It is this long period of latency that renders the disease so dangerous. An

infected animal may be carried half way round the world before the symptoms of the malady become sufficiently violent to attract attention, and yet all this time it may have been scattering the seeds of the disease far and wide. The average period in inoculated cases is nine days, though it may appear as early as the fifth, or it may be delayed till the thirtieth or fortieth day. In the experimental transmission of the disease by cohabitation, under the French commission, a cough (the earliest symptom) appeared from the sixth to the thirty-second day, and sometimes continued for months, though no acute disease supervened. Hot climates and seasons abridge the period of latency, as the disease has been found to develope more rapidly in summer than in winter, and in the South than in the North. A febrile condition of the system also favors its rapid development. Of the symptoms of the disease, Dr. Law says:

"These vary in different countries, latitudes, seasons, altitudes, races of animals, and individuals. They are more severe in hot latitudes, countries, and seasons, than in the cold; in the higher altitudes they are milder than on the plains; in certain small or dwarfed animals, with a spare habit of body, like Brittanies, they appear to be less violent than in the large, phlegmatic, heavy-milking, or obese Shorthorn Ayrshires and Dutch. A newly-infected race of cattle in a newly infected country suffer much more severely than those of a land where the plague has prevailed for ages; and finally certain individuals, without any appreciable cause, have the disease in a much more violent form than others which stand by them in precisely the same conditions.

"Sometimes the disease shows itself abruptly with great violence and without any appreciable premonitory symptoms, resembling in this the most acute type of ordinary broncho-pneumonia. This, however, is mostly in connection with some actively exciting cause, such as exposure to inclement weather, parturition, overstocking with milk, heat, etc.

"Far more commonly the symptoms come on most insidiously, and for a time are the opposite of alarming. For some days, and quite frequently for a fortnight, a month or more, a slight cough is heard at rare intervals. It may be heard only when the animal first rises,

when it leaves the stable, or when it drinks cold water, and hence attracts little or no attention. The cough is usually small, weak, short and husky, but somewhat painful and attended by some arching of the back, an extension of the head upon the neck, and protrusion of the tongue. This may continue for weeks without any noticeable deviation from the natural temperature, pulse, or breathing, and without any impairment of appetite, rumination, or coat. The lungs are as resonant to percussion as in health, and auscultation detects slight changes only, perhaps an unduly loud blowing sound behind the middle of the shoulder, or more commonly an occasional slight mucus rattle, or a transient wheeze. In some cases the disease never advances further, and its true nature is to be recognized only by the fact that it shows itself in an infected herd or on infected premises, and that the victim proves dangerously infecting to healthy animals in uninfected localities. It may be likened to those mild cases of scarlatina which are represented by sore throat only, or to the modified variola known as chicken-pox.

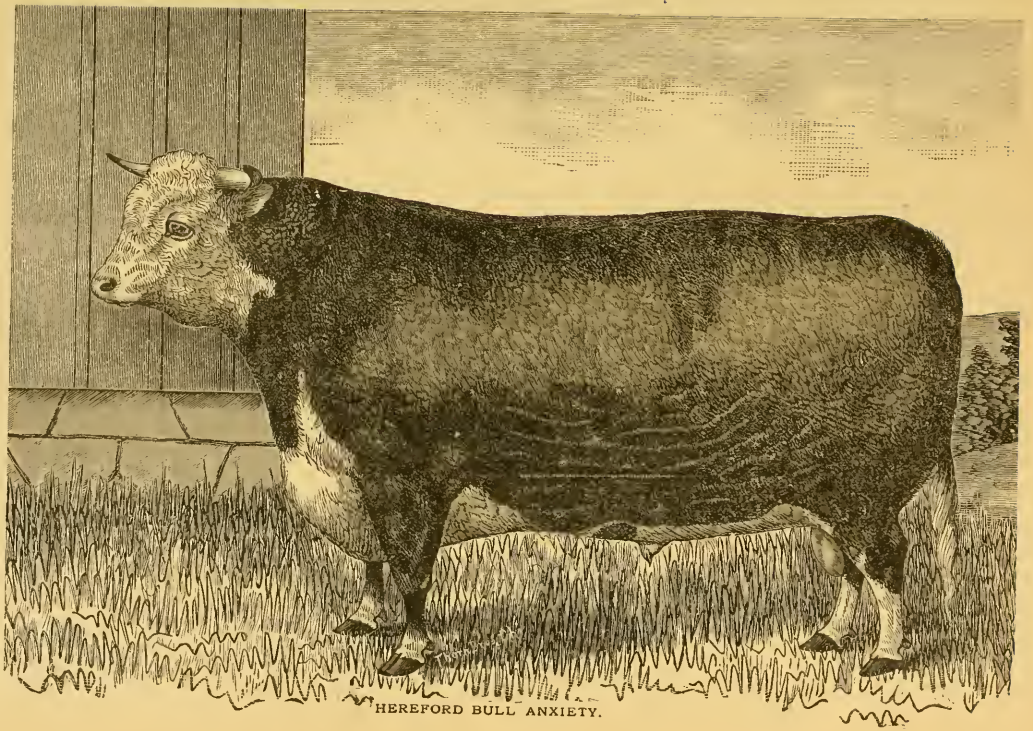
"In the majority of cases, however, the disease advances a step further. The animal becomes somewhat dull, more sluggish than natural, does not keep constantly with the herd, but may be found lying alone; breathes more quickly (20 to 30 times per minute in place of 10 to 15); retracts the margins of the nostrils more than formerly; the hair, especially along the neck, shoulders, and back, stands erect and dry; the muzzle has intervals of dryness, and the milk is diminished. The eye loses somewhat of its prominence and luster; the eyelids and ears droop slightly, and the roots of the horns and ears and the limbs are hot or alternatively hot and cold. By this time the temperature is usually raised from 103° F., in the slightest or most tardy cases, to 105° and upward to 108° in the more acute and severe. Auscultation and percussion also now reveal decided changes in the lung tissue.

"The ear applied over the diseased portions detects in some cases a diminution of the natural soft-breathing murmur, or it may be a fine crepitation, which has been likened to the noise produced by rubbing a tuft of hair between finger and thumb close to the ear. Where this

exists it is usually only at the margin of the diseased area, while in the center the natural soft murmur is entirely lost. In other cases a loud blowing sound is heard over the diseased lung, which, though itself impervious to air and producing no respiratory murmur, is in its firm, solid condition a better conductor of sound and conveys to the ear the noise produced in the larger air-tubes.

"Percussion is effected by a series of taps of varying force delivered with the tips of the fingers of the right hand on the back of the middle finger of the left firmly pressed on the side of the chest. Over all parts of the healthy lung this draws out a clear resonance, but over the diseased portions the sound elicited is dull, as if the percussion were made over the solid muscles of the neck or thigh. All gradations are met with as the lung is more or less consolidated, and conclusions are to be drawn accordingly.

"In other cases we hear on auscultation the loud, harsh, rasping sound of bronchitis, with dry, thickened, and rigid membranes of the air-tubes, or the soft, coarse, mucous rattle of the same diseases when there is abundant liquid exudation, and the bursting of bubbles in the air passages. In others there is a low, soft, rubbing sound, usually in jerks, when the chest is being filled with or emptied of air. This is the friction between the dry, inflamed membrane covering the lungs and that covering the side of the chest, and is heard at an early stage of the disease, but neither at its earliest nor its latest stage. Later there may be dullness on percussion up to a given level on one or both sides of the chest, implying accumulations of liquid in the cavity, or there is a superficial dullness on percussion, and muffling of the natural breathing sound with a very slight, sometimes almost inaudible, creaking, due to the existence of false membranes (solidified exudations) on the surface of the lung or connecting it to the inner side of the ribs. This is often mistaken for a mucous rattle that can no longer take place in a consolidated lung in which there can be no movement of air nor bursting of bubbles in breathing. The mucous rattle is only possible with considerable liquid exudation into the bronchial tubes, and a healthy, dilatable condition of the portion of the lung to which these lead. In rare cases there will be splashing



HEREFORD BULL ANXIETY.

sounds in the chest, or when the patient has just risen to his feet a succession of clear ringing sounds, becoming less numerous and with longer intervals until they die away altogether. These are due to the falling of drops of liquid from shreds of false membrane in the upper part of the chest through an accumulation of gas into a collection of liquid below. It has been likened to the noise of drops falling from the bung-hole into a cask half filled with liquid. Peculiar sounds are sometimes heard, as wheezing, in connection with the supervention of emphysema, and others which it is needless to mention here.

"In lean patients pressure of the tips of the fingers in the intervals between the ribs will detect less movement over the diseased and consolidated lung than on the opposite side of the chest where the lung is still sound.

"As seen in America, in winter, the great majority of cases fail to show the violence described in books. The patients fall off rapidly in condition, show a high fever for a few days, lie always on the same side (the diseased one) or on the breast, and have a great portion of one lung consolidated by exudation and encysted as a dead mass, and yet the muzzle is rarely devoid of moisture, the milk is never entirely suspended, and may be yielded in only a slightly lessened amount as soon as the first few days of active fever have passed.

"During the extreme heats of summer, on the other hand, the plague manifests all its European violence. The breathing becomes short, rapid, and labored, and each expiration is accompanied by a deep moan or grunt, audible at some distance from the animal. The nostrils and even the corners of the mouth are strongly retracted. The patient stands most of its time, and in some cases without intermission, its fore legs set apart, its elbows turned out, and the shoulder-blades and arm-bones rapidly lessening their covering of flesh, standing out from the sides of the chest so that their out-lines can be plainly seen. The head is extended on the neck, the eyes prominent and glassy, the muzzle dry, a clear or frothy liquid distils from the nose and mouth, the back is slightly raised, and this, together with the spaces between the ribs and the region of the breast-bone, are very sensitive to pinching; the secretion of milk is entirely arrested, the

skin becomes harsh, tightly adherent to the parts beneath, and covered with scurf, and the arrest of digestion is shown by the entire want of appetite and rumination, the severe or fatal tympanies (bloating), and later by a profuse watery diarrhea in which the food is passed in an undigested condition. If the infusion into the lungs or chest is very extensive, the pallor of the mouth, eyelids, vulva, and skin betrays the weak, bloodless condition. The tongue is furred, and the breath of a heavy, feverish, mawkish odor, but rarely fetid. Abortion is a common result in pregnant cows."

During the summer the disease shows its greatest violence, and it is then that its mortality is not only high but early. The great prostration attendant on the enormous effusion into the organs of the chest, the impairment of breathing, and the impairment or suspension of the vital functions in general, causes death in a very few days. In other cases the animals die early from distention of the paunch with gas, while in still others the profuse scouring helps to speedily wear out the vital powers. In certain severe cases the rapid loss of flesh is surprising. Dr. Law says that in such cases a loss of one-third of the weight in a single week is by no means uncommon, and even one-half may be parted with in the same length of time in extreme cases. In fatal cases all symptoms become more intense for several weeks, the pulse gradually becomes small, weak, and accelerated, and finally imperceptible; the breathing becomes rapid and difficult, the mucous membrane of the mouth, eyes, etc., becomes pale and bloodless, emaciation goes on with active strides, and death ensues in from two to six weeks. Sometimes, in cold and dry weather, a portion of dead lung may remain encysted in the chest, submitting to slow liquefaction and removal, and such animals will go on for months doing badly, at last to sink into such a state of debility that death ensues from exhaustion and weakness. In still other cases the retention of such diseased masses, and the consequent debility, determines the appearance of tuberculosis, from which the animal dies. Purulent infection and rupture of abscesses into the chest are also causes of death, but the author states that no such cases have come under his observation.

PREVENTIVE MEASURES.

"As regards the future, I would strongly urge the National Government to assume not only the direction but the execution of this work of stamping out the plague. The following among other reasons require this:

1. The disease is an exotic, and if once suppressed could only reappear in America as the result of importation.

2. It is gradually extending, and if neglected must lay the entire continent under contribution.

3. If it reached our unfenced ranges in the West, it would be ineradicable, as it has proved in the European Steppes, in Australia, and in South Africa.

4. As the seeds remain latent in the system for three months, infected cattle may be moved all over the continent, from ocean to ocean and from lakes to gulf, and live for a length of time in a new herd before they are suspected.

5. Old cases with encysted masses of infecting matter in the lungs may show no obvious signs of illness, and may be bought and sold as sound and mingle with many herds in succession, conveying infection wherever they go. There is, therefore, the strongest temptation for the owner to seek to secure a salvage by the sale of apparently sound but really infecting animals. There is further the strongest probability that in a new locality these cattle would not be suspected until one or more herds had been irretrievably ruined.

6. The infection of the South and West would inevitably spread the infection over the whole Middle and Eastern States, as infection would pour in continuously through the enormous cattle traffic, and all rolling-stock, yards, etc., of railways would become infected.

7. The live stock bears a larger proportion of the State wealth West and South than in the East, hence the West has most at stake in this matter, and should bear its share in the work of extermination.

8. The plague is more violent in proportion to the heat of the climate, so that it will prove far more destructive in the semi-tropical summers of the South and West than on the Atlantic seaboard.

9. No State can be rendered secure unless all States are cleared

of the pestilence. One remaining center of infection on the continent is likely to prove as injurious as the one infected cow landed in Brooklyn in 1843, the sad fountain of all our present trouble.

10. It has been decided by a United States Supreme Court in Illinois, that a state law forbidding the introduction of cattle from a neighboring state, because it is feared they may introduce disease, is unconstitutional. Therefore each state must keep a guard along its whole frontier, with quarantine buildings, attendants, and inspectors, and must quarantine all cattle as soon as they shall have crossed.

11. Smuggling is inevitable so long as there are distinct authorities in two adjacent states. Rascally dealers have repeatedly run cattle into New York from New Jersey, sold them and returned with their money before the matter could be discovered and the law officers of New York put on their track. Were the law and execution one for the states such men could be apprehended and punished wherever found. In Europe it is found that an armed guard with intervals of 200 yards patrolling the whole frontier day and night is not always sufficient; how much less, therefore, with us a law that can be evaded with such impunity!

12. Finally, there is little hope of Delaware, Maryland, and Virginia stamping out the plague at their own expense, so that unless the United States takes the matter up, the work of New York, New Jersey, and Pennsylvania will be but money thrown away.

No case of pleuro-pneumonia had ever been seen in the United States west of a limited area on the Atlantic coast, before a speculator in Jersey cattle introduced the disease into his herd in Ohio, in the autumn or winter of 1883. From his infected herd he sent a cow having the disorder, to mingle with a number of other animals to be sold at auction in February, 1884, at Virginia, Illinois. That cow conveyed the disorder to others, which in turn infected still others in Illinois, in Kentucky and in Missouri. Cattle that were exposed to the contagion were also sent to Texas, and there were grave fears that the malady had been introduced there, and also in Tennessee. Thus a single animal was clearly the cause of the infection of at least four great states, of the death of many thousands of dollars' worth of valuable stock, and of a great

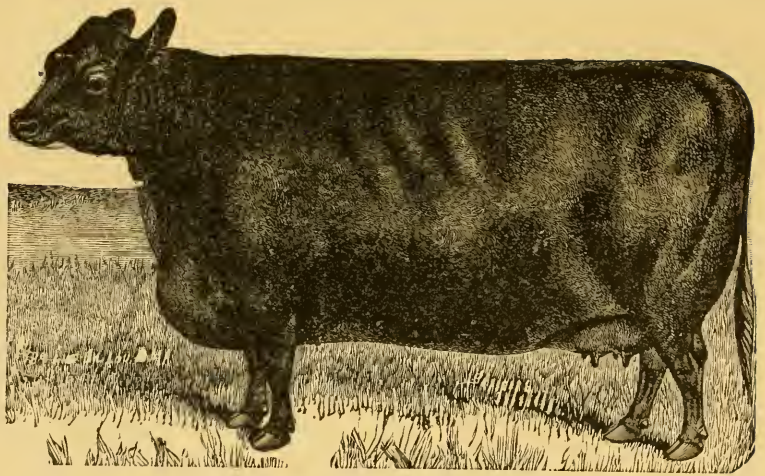
outlay of the money of the people of the several states in which attempts to control the scourge have been made.

In February 1879, the English Privy Council forbade the importation into Great Britain of any living cattle from America. This was required by a general act, ordering that no living cattle from any country in which pleuro-pneumonia might exist, should be permitted to land in the kingdom. The order of the Privy Council has been in force since the date mentioned, and by the laws of Great Britain must remain so until the United States shall be able to show that the disorder no longer has an existence within their borders. The enforcement of that order has reduced the price of every living bullock since sent from this country to England, to figures at least fifteen dollars below those for which beeves of like weight and quality from countries free of the disease sold, at the same times. This caused, and still causes, a corresponding depression in the value of all fat beeves in the United States. This depreciation of value of the higher grades reduced prices of all inferior qualities, in a degree proportionate to their nearness to the best. The tremendous losses thus inflicted upon owners of beef cattle, have each year since the issuance of that order of the Privy Council, equaled a sum great enough to pay fairly for every infected animal, building, fence, or other thing capable of harboring the germs of the disease, and to also pay all necessary cost of stamping out the pestilence from every nook.

The matter became recognized as one of national importance, and in November, 1883, a national convention of stockmen was held in Chicago, to discuss the subject. The convention sent a committee to Washington, where they obtained the passage of a law creating the bureau of animal industry, and in other ways providing for the protection of the cattle interest. In November, 1884, another national convention in Chicago, formed the National Cattle Growers' Association of America, which also sent a committee to Washington, to obtain further action by Congress for the good of cattle owners. A few days after the convention in Chicago adjourned, another was held in St. Louis, and the National Cattle and Horse Growers' Association was organized. This body has been very active in behalf of the cattle interest.

ANTHRAX — BLACK TONGUE — BLACK LEG.

The above names, as well as many others for the same general disorder, are merely indicative of the most prominent symptoms of a disease which has been very fatal among the young in the west, for some years. It seems to be a constitutional disorder, which changes the character of the secretions as well as the blood. While it is contagious from contact with the discharges of poisonous matter of an affected animal, often destroying nearly all the young stock in a herd, yet its origin may arise from local circumstances and surroundings, and spread over a section if not checked at once. One of the peculiarities of the disease is that it attacks the young and apparently most thriving stock; also, the suddenness with which it terminates, the animal often being found dead in the field before notice has been had of its being sick. There is no doubt but what it is, to some extent, caused by too full feeding of dry corn husks in gathered fields, combined with local influences. The first symptoms of an attack will be plethora, feverishness, a halting on one limb, and excessive tenderness of the skin in spots, to be followed by extensive swellings of those parts, and deposits of black, tarry blood, which evolves gas among the tissues, which gives forth a peculiar crackling sound if the hand is pressed over the spot. Bloody, yellowish matter may ooze forth, the spot may slough off, leaving an ichorous ulcer. It may take the form of eruptive blisters, which break, dry up with gangrenous appearance, and gradually spread over adjacent parts. It may take the same form of blisters, but appear on muzzle, jaw and tongue, leaving behind ulcerous sores, with bloody, yellowish discharge from the mouth. It may take an internal form, with bloody discharge from nostrils, bloody dung and black urine, and death in a short time. Animals which are affected must be separated from the well. Dead carcasses and all discharges must be buried, and stables where they have been kept disinfected, if success is to be expected. While treatment is uncertain and unsatisfactory in the worst cases, yet many can be saved by proper care, and more can be prevented from taking it. After the separation of the sick from the well, give th



BEAUTY OF CANDYGLEARACH. (8398.)

(Owned at Goodwin Park Stock Farm, Beloit, Kansas.)

which are well two ounces of bisulphate of soda, each, in a mash, twice daily for three days, thereafter once each day as long as there is any danger. Give the affected animals two drachms of chlorate of potash, three times daily. Inject into the bowels, daily, a weak solution of carbolic acid and water, one part of acid to one hundred parts of water. Rub the tender spots, or those parts which show signs of swelling, with any stimulating liniment, or even turpentine. Open the blisters and the ulcerous spots and thoroughly cleanse them by the use of the following:—

Chloride of Zinc, one scruple;
Water, half a pint.—Mix.

Apply this lotion three times daily. No meat nor milk of an affected animal must be fed to anything, as it is fatal in its effects.

FOOT AND MOUTH DISEASE — CONTAGIOUS APHTHA.

This disease affects cattle, swine, sheep, and is of a highly contagious nature. It is not so much to be dreaded from its directly consequent fatality as it is for its after consequences — the condition of weakness and depression in which it leaves its subjects, and from which it is said to cost, in most cases, more than the future value of the animals to recover them. The disease attacks the mouth and feet simultaneously. The mouth will be found hot and covered with blisters, the tongue and lips being also affected. These blisters burst, and the surface becomes raw, inflamed and swollen. In aggravated cases the tongue protrudes from the mouth and is covered with ulcers, which suppurate and cause the tissues to slough away. The disease frequently commences in the hind feet, in consequence of which the animal is continually stretching out first one and then the other hind foot and shaking them. On examination, blisters and watery pustules are found around the coronet and between the digits, the parts are inflamed and swollen, and the animal cannot be urged to rise. In some cases the feet become ulcerated, the hoofs slough away, in part or wholly, leaving the bones exposed to view. With such a condition of things there must be much suffering, with high fever, eyes red, lungs congested, breath fetid. In milking cows the teats and udder

become inflamed and ulcerated, abscesses are formed, and sloughing takes place, which of course renders the milk totally unfit for use.

The treatment consists in the separation of the sick from the well, and administering two ounces of sulphate of soda daily, to the well, as a preventive. The sick are to have a pound of Epsom salts each as a laxative, at the commencement of the treatment. An astringent mouth-wash is to be used, composed as follows:—

Borax, one ounce;
Tincture of Myrrh, one fluid ounce;
Water, one quart.—Mix.

Use twice each day. If the teats are also affected, a weak solution of half a drachm of carbolic acid in a quart of water, can be used with good effect, following with a dressing of glycerine. The feet should be thoroughly cleansed with water, then a rag drawn through between the toes, followed by an application, with a feather, of:—

Oil of Vitriol, one fluid ounce;
Water, four fluid ounces.—Mix.

Apply twice each day, and keep the feet tied up in tarred cloths. All detached pieces of horn must be removed at once, and the animals must be isolated from the rest of the herd.

EPIDEMIC OPHTHALMIA.

This is a disease of the eyes which takes an epidemic form, whether from contagion, infection or otherwise, has not yet been determined, but when once an animal in a herd becomes affected, it soon spreads with more or less severity, among the rest of the herd, as well as among the neighboring herds with which such animals may come in contact. The eye at first begins to appear raw, and after a day or two a sky blue spot appears just below the sight, which continues to grow until it covers the whole eye, then assumes a lighter color; after this, it grows smaller and sticks out from the ball of the eye about the size of a pea. The animal appears in a great deal of pain all the time until it becomes totally blind.

To facilitate treatment, and to check its spread, the diseased ones should, as soon as anything appears amiss with the eyes, be

separated from the apparently sound ones, and be placed in a roomy, airy, dry shed, which should be darkened without interfering with proper ventilation. The cattle should be kept therein during daytime, but should be given liberty on an enclosed pasture every night, away from other cattle. Then give to each one over two years old, a pound and a half, to those from one to two years old, one pound, and to younger ones, according to age, from four to eight ounces of Epsom or glauber salts, dissolved in from a pint to a quart of warm water, and to which is added from one to two ounces of powdered ginger. Give sloppy food, into each ration of which is added a drachm of powdered nitrate of potassa; also give unripe fruit, sliced to prevent choking, and fresh cut grass during the day, which need not be much when they go out at nights. To the root of each horn, or otherwise, fasten a folding of cloth in such a manner that it hangs over both eyes, and a few inches below them. This should be kept wet during the day with a lotion composed of

Chloride of Zinc, one drachm;
Carbolic Acid, two drachms;
Water, one gallon.—Mix.

Apply to the cheek, below each eye, to a space of about two square inches, a small portion of a blister, composed of

Spanish Flies, two drachms;
Lard, two tablespoonsful.—Mix.

Shave off the hair and rub well in, so as not to leave any on the surface which can get into the eye. This should be applied in the morning, and be washed off six hours thereafter with soap suds and a soft sponge, and a coat of lard applied to the blistered surface once a day thereafter.

After recovery, it will be proper to still keep the cattle for some time, say a month, away from other cattle. The shed should then be thoroughly cleaned, disinfected, and whitewashed, and not be used for at least one month thereafter for any live stock. As this disease is communicable to sheep, these should not be allowed to come near such diseased cattle.

MISCELLANEOUS MATTERS.

SPAYING COWS.

This delicate operation may be successfully performed by any man of nerve and caution. The best time is within six weeks after calving. It is necessary to study carefully the relation of the parts, and the feeling of the ovaries in place, in a slaughtered animal; and well, also, to practice the administration of chloroform, till familiarity with this desirable preliminary is gained. The cow must be firmly held, so that she will stand, if possible, and should have fasted twenty-four hours. The incision is made in the loin, just in front of the haunch. Such incisions, where the skin is loose, are made by first shaving off the hair, an inch or more wide, on the line of the proposed cut; then making a fold of the skin, at right angles to and across the middle of the shaved place, the operator grasps this in his left hand, on one side of the line, and gives into the right hand of an assistant a similar grip of the fold on the other side, leaving the shaved line exposed. Then a quick, strong stroke with a sharp knife across the fold will, if properly directed, make an opening through the hide of about the right length (five inches), clean and true. Should an artery, or large vein, be cut, it must be taken up (the end found, drawn out and tied with a thread), or, if a small one, twisted up so as to stop the flow of blood. Cutting through into the cavity of the abdomen, the hand is introduced and the ovaries felt for, found, and worked off with a strong thumb nail. A "steel thumb nail" is sometimes used to advantage. Care should of course be taken not to tear the parts, nor to make the incision too large, nor too low. If too low, the contents of the abdomen will interfere. So, also, if the intestines are full, they will fill up the abdominal cavity, and seriously embarrass the operation. When the ovaries are removed, the wound is wiped with a damp cloth, and closed with sutures—which are single tied stitches. Stout linen thread is used, well tallowed, and a curved sail-needle, new and bright. The sutures are placed an inch and a half to two inches apart, and tied loosely, only so as to bring the lips of the wound together; they will swell so as to close perfectly.

It is well to leave the lower part of the wound sufficiently open to allow pus to discharge freely, and always encourage the wound to heal from the top downward, for the same reason. Protect with a greased linen cloth laid over the wound, and a blanket or sheet, according to the weather. The cow should be kept stabled, and her diet should be simple and loosening rather than heating, consisting of roots, with cut and soaked hay, or cut grass in the spring, and with a warm, thin mash of wheat bran now and then, perhaps.

KICKING COWS.

A kicking cow is regarded by most dairymen as a great nuisance. Not unfrequently some of the best milkers in the herd show this bad habit, and it is safe to say that vast losses, in the aggregate, are sustained every year, which may be traced directly, or indirectly, to this fault. In most instances the habit comes from an improper manner in which the cow, when a heifer, was broken to milk, or from some bad management of the milker after the animal has grown older. Cows of a highly nervous temperament will, not unfrequently, become confirmed kickers, from the rough and careless manner in which the milker handles the udder and teats while milking. Any rough or careless handling of the udder, when filled with milk, is more or less painful to the animal, and a kick may be given, not from any viciousness or ill temper, but is simply an involuntary motion of the foot to relieve pain.

The most simple, as well as the most effectual, remedy for kicking cows, is that employed by some of the dairymen of Herkimer county. It consists in buckling a leather strap rather snugly about the body of the cow, just in front of the udder. The cow is then rendered powerless to do harm in kicking, and the most confirmed and viciously inclined kickers are at once subdued. Those who have employed this simple method say, that in no instance in their experience, has it failed. Scolding, fretting, loud threatening, thumping, and flagellations, are of little use. The cow may have a hot temper, as well as her milker, and resist all sorts of discipline. The law of kindness is usually much more effective.

DESTROYING LICE ON CATTLE.

Aloes in fine powder is a specific for the destruction of lice on all animals, and as it has no poisonous properties, its intense bitterness being what kills, it can be freely applied, and as it is to be used in a dry state, its application is as safe in cold as in warm weather, consequently is free from all objections urged against other remedies. Use with a fine pepper-box, dusting and rubbing it in all over, and then curry out inside of a week. Or, take a pound of fresh lard, a fourth of a pint of kerosene oil and four ounces of sulphur powder — or flowers of sulphur; mix them thoroughly. With this mixture rub the animal's head, also along the spine, and upon the shoulder and brisket, and under the thighs, and wherever the vermin is seen. Repeat the operation once a week until the lice disappear, which will not be long. Or, take quassia chips, steep in water and wash the animal thoroughly. One application will kill the lice, and in case of nits that are not hatched, the second application, applied a few days after, will entirely rid the stock of the vermin.

GRUBS IN THE SKIN.

The grubs are produced by the eggs deposited by the gad-fly during the latter part of summer. They may be prevented by moistening the hairs on the shoulders, back, and loins of cattle, every other day, with a decoction of white oak or walnut leaves. When present, they may be removed simply by squeezing them out with the fingers. When present in large numbers, they of course cause considerable irritation in the skin and underlying tissues, and thus may interfere with the well-being and thriving of the cattle.

SELF-SUCKING COW.

A self-sucking cow is prevented from thus indulging by an Illinoisian, who puts a halter or strap over her head that will hold a common bridle-bit in her mouth. She eats and drinks just as well as without it after a little, and is finally cured of the propensity.

ARTICLES IN THE EYE.

Hay seed, chaff, etc., may be removed by a pair of small operating forceps, or with the rounded point of a lead pencil covered by a soft handkerchief. Lime, sand and harsh articles can be washed out with water and a small syringe. In some instances the animal may have to be cast before it can be done. The consequent inflammation may be treated the same as it is for horses, as is many other diseases such as sprains, bruises, wounds, etc.

FEEDING CATTLE.

PRACTICAL HINTS ABOUT SELECTING AND FEEDING.

The growing competition which the farmer of the country east of the ninety-seventh degree of longitude has met from stockmen in Texas and the states and territories lying west of the longitude mentioned has reduced the profit of fattening cattle to a low figure, and in many cases has put the balance on the wrong side of the account. Even where under favorable circumstances the stock feeder has been, in the last three or four years, what may justly be called successful it has been only by close attention to details—a careful watching of every point where a loss is to be avoided or an advantage gained. One of the most important matters to be considered by the farmer who purposes to fatten cattle is the selection of the animals, as upon their readiness to make flesh and fat from the food given to them must depend in a great measure if not entirely the profitableness of the operation.

SELECTION OF ANIMALS.

One of the first and most important matters, therefore, which he who intends to fatten cattle should look after is the selection of animals which will best answer his purpose. It may be taken as granted that every person of good sense will try to secure those which have in them more or less perceptible signs of good blood. In this age and country, where for so many years the noble shorthorn has been placing his stamp upon the herds, and where the magnificent Hereford is doing his work so efficiently to raise the standard of excellence, there need be no great difficulty in getting quite good grades. The prominent characteristics of such animals should be:

The nose should be broad, that the mouth may close upon a goodly quantity of grass at each bite, and thus save the time of the animals, for even in this work of eating, time is money. The beast which can quickly fill his stomach with food needs to spend less time in working. Quickly filled, the steer is most of his time resting quietly, converting the food into tender, juicy flesh.

The head should be short and broad, giving an ample breadth between the eyes. Long, deer-like faces belong to the ne'er-do-wells. The beast which carries one may be nervous, spirited and active, but he is like tall, spare men, altogether too restless, and slow to take on flesh. Still, the head should be held well up and the carriage be spirited, for a listless, stupid steer drooping around has not life enough to secure its full share of the good things attainable, and adds nothing to the salable quality of a herd. The horn should be fine and short, and the eye should be full and bright.

The neck should be short and fine. A thick, clumsy neck may be good enough for a hog but is emphatically out of place in a steer. The brisket should come down deep and full, and there should be great width between the fore legs, to give ample room for the lungs.

Back of the shoulders the body should be full, the ribs springing well out, like the hoops of a barrel, and not be flat like the frame of a corn-crib. Let the back be broad, straight and smooth, with no sinking between the chine and the rump. The hips should be straight and the flanks well filled, and come down low. A steer with a belly drawn up like that of a race horse should be avoided. Such an one can never be profitable, for he has too little room in his workshop in which to carry on the task of making fat and flesh of the food he has taken off the land. The hide should be soft, smooth, and velvety; if thick and covered with a good coat of hair so much the better, as less food will be required for merely keeping up the animal heat in cold weather. The thigh should be full and the hind legs straight; all the legs short and the steer stand squarely on them. Add a broad loin and rump and a fine tail, and you have a steer which will take on fat readily, and in a short time become a source of pleasure and profit to his owner.

FEEDING THE STEERS.

Having selected a bunch of steers answering as nearly as possible to the brief outline given above, see to it that none of them have had better care and food than you intend and will be able to give them. If this be not done it will be found that those cattle which have been accustomed to plenty of good food and care will lose ground when turned

upon grass. In buying cattle for the purpose of naving them turn the grass of the farm into cash, those which have been "roughed" through the winter, with very little grain, should be selected. The stomach of any animal fed largely upon concentrated food becomes contracted in size and incapable of holding any considerable quantity of grass. So long as an animal is kept upon a rich diet the small stomach may serve to do all the work required to keep the beast fat, but if the animal be turned upon the fresh grass, composed largely of water, its stomach is too small to contain enough of the bulky food to last more than a very short time. The animal is in a condition of chronic hunger, and "walks its legs off," in the vain effort to supply the wants of a system accustomed to much more concentrated food. Meantime those steers which have been used to picking up a not very plenteous living from stalk fields and straw stacks find themselves "in clover" and thrive finely. Their stomachs, having been constantly distended with bulky and coarse food, are capable of stowing away a large quantity of grass upon which they rapidly grow fat and smooth.

In selecting steers it would be well to choose those raised in a colder and more rugged climate than that in which it is proposed to fatten them. This is especially advisable when the design is to fatten them in the latitude of northern Illinois, as, especially east of the Mississippi, the fall, winter and spring are often changeable, cold and wet. In dry, clear weather, even though it be quite cold, cattle will thrive with a fair degree of care and suitable food; but it is very difficult to keep them from shrinking when exposed to cold rains or wet snows. Under such unfavorable circumstances he is fortunate who keeps the southern born steer from losing condition, even with the aid of good shelter , while the steer accustomed to roughing through the severe winters of more northern climates thrives finely upon what to him is unusual plenty.

It would be well to look for steers which have had but little corn and have not been housed, and when an animal under such treatment has come out looking bright and healthy, and he answers the description above given, he should be bought. When well bred such animals will give to the judicious feeder a liberal return for any

food and care he may give them. Avoid those cattle described as having been liberally fed with grain, giving them good, solid flesh with which to start in their home. Such cattle will invariably shrink when put on fresh grass. Their stomachs hold too little food to keep them in good flesh without the aid of grain. In many cases their digestive organs have been seriously injured, "burnt out," and they can never make full return for the food they eat.

CHANGING FOOD AND PASTURE.

Recognizing the fact that time is a most important element in the business of fattening cattle, as it is in other business operations, breeders have sought to establish breeds which would mature at an early age, and at the same time give a large amount of juicy, tender flesh for the food they eat. The feeder who would make a good profit should be careful not to throw away any of the advantages the efforts of skillful breeders have placed within his reach. He should not permit his cattle to stop growing for even a single day, as if they do so the food they have consumed, the labor of caring for them and the interest upon the value of the cattle themselves as well as upon the value of the land occupied and the wagons and horses used in feeding, for the time in which they make no progress, is lost to their owner. Anything which breaks the regular habits of cattle, even for a short period, will effectually prevent their gaining flesh, if it does not cause them to actually lose in weight.

Cattle are naturally creatures of very regular habits. What they have done to-day they will do again to-morrow under like circumstances, and at nearly the same hour of the day. The feeder who is as thoroughly acquainted with his cattle as he should be knows where they will be at certain hours, and what they will be doing. At one time they will be scattered, feeding; at another they will be gathered, resting. Together they will take their way to water, and when the hour draws near at which they have been led by judicious, regular feeding to expect to receive a few ears of corn, they will with one accord wend their way to the feeding place to receive the corn which is to finish the work of the day by giving to the flesh and fat made from the grass the solidity needed to give it high value.

There is an old saying that change of pasture makes fat calves, but. like many another wise saw, this has more sound than sense. Cattle never gain flesh when in a field new to them. Three or four days pass before they will become accustomed to their new surroundings and settle in a regular round of habits. If moved from one field to another adjoining, this same restlessness will appear, although if a gate between the two fields be left o[illegible] they will pass from one field to the other without sign of uneasiness. Introducing strange beeves into a field occupied by a herd will cause the same disturbance. The social position of each of the new comers must be settled by much fighting and more threatening before the chief business of their lives can go on quietly and comfortably. Having got a herd together it would be advisable to avoid as far as possible changing from field to field, and especially sudden changes of diet, as such are almost certain to either "throw the cattle off their feed" or to lead them to over-eating with more disastrous results.

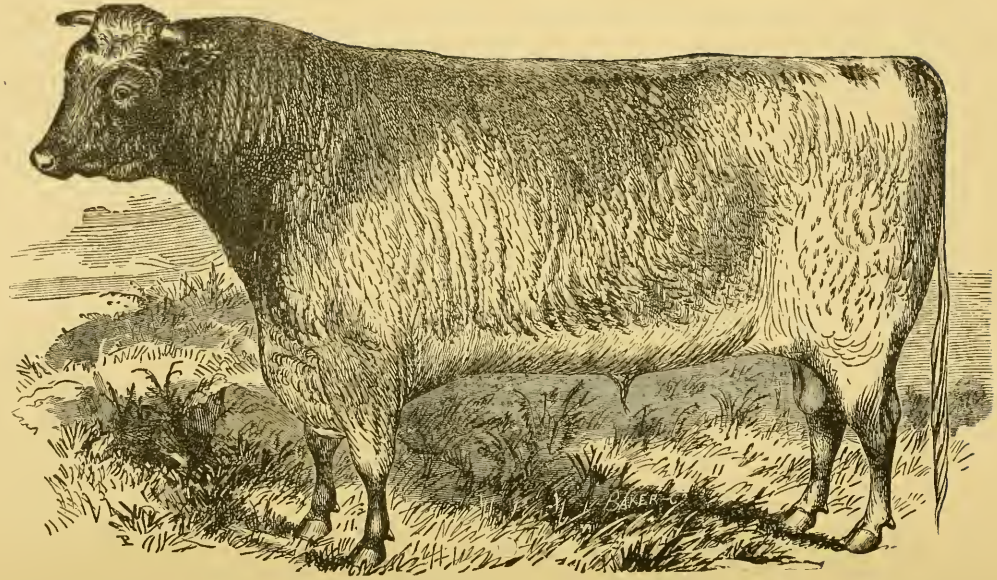
THE FEED LOT.

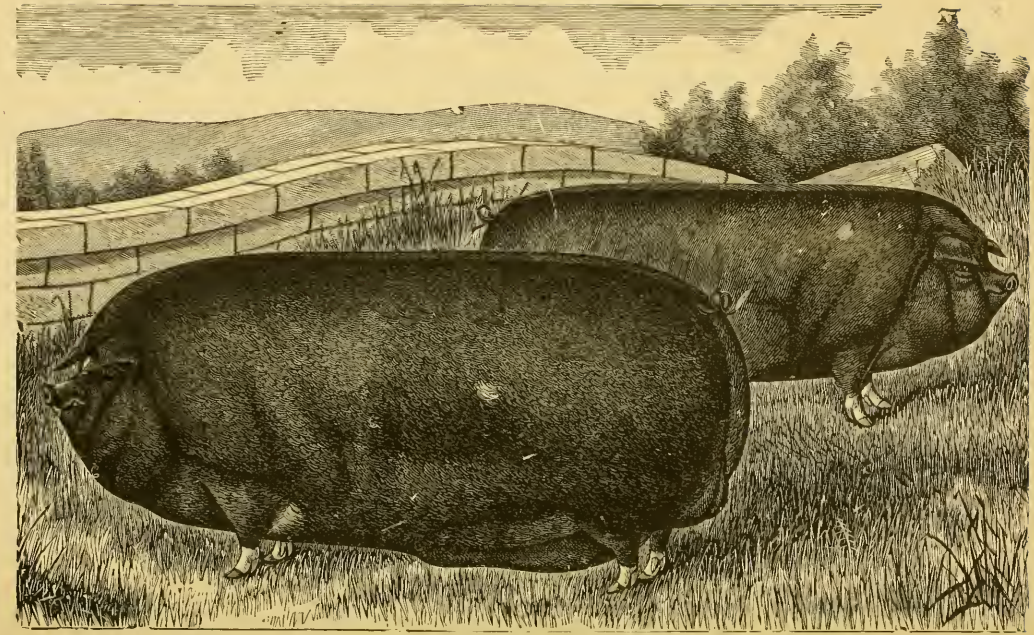
If the intention is to feed cattle in the winter months, attention should be given to providing a "feed lot," in which cattle may be fed comfortably and profitably. Much will be gained by providing shelter from the biting winds from the south, the west and the north. Where there are timbered tracts large enough, a good plan is to clear a space great enough for the purpose, open on the east and closed on all other sides by the timber. In such a place the cattle will be protected from all but the east winds, which are seldom very cold, and will be early warmed by the direct rays of the sun, instead of standing until late in the day shivering away the flesh they have slowly gained. Less of the food eaten is needed for merely keeping up the animal heat, and the animal will eat and drink more when sheltered from cutting winds and warmed by the sun's rays than when exposed to the former and cut off from the latter. It is especially important that the sunlight should reach the stock early in the day, for, even when there is little perceptible warmth in the rays, there is in them that which enlivens the spirits of beast as well as of man. It has been found that cattle fat-

turn better in an open field, exposed to the winds from every point of the compass, than they do in fields in the midst of timber, where the sun's rays seldom or never reach them, although in the timber they were sheltered from the winds.

Where there is not timber much can be done to secure comparative comfort for the stock, and at small expense, by building rough sheds of posts, poles and brush, with perhaps a covering of corn stalks, straw, coarse hay or other material. Some good will be done by simply making a wind-break of corn stalks against the outside of the fence surrounding the feed-lot. And it is beyond question true that an ample return will be made by the cattle for any attention given to providing cheap shelter in the ways suggested.

With good pastures and well-bred cattle, well cared for, man needs but little more to gain him a fair profit for his labor. No great labor is required in feeding and no part of the farmer's life can give him more satisfaction than that of putting into the most condensed and most pleasing form the raw materials resulting from his toil. The first requisite is a pasture with plenty of good grass, and pure water to which stock can have free access. Salt should be placed where every beast in the herd can easily reach it whenever appetite leads to taking a taste. By this plan the crowding and fighting, seen when salt is given only at rare intervals, will be avoided, and the animals will be much better for it. Many devices have been used for keeping salt constantly within reach of cattle, without wasting through storms or otherwise, and few are better than a hopper large enough to hold a barrel full of salt. This hopper should rest upon a heavy shelf or bench about two feet from the ground, the edge of which should be slightly raised. An opening of about an inch between the shelf and the bottom of the hopper will permit a little salt to fall upon the bench, and will admit the end of the tongues of the cattle should the salt fail to fall, as it probably will at times. Over all should be a roof large enough to protect the salt from storms. The whole should, of course, be firmly fixed so that it will not be pushed over. The chief merit of the device lies in the fact that it is easily made by any one.





THE

AMERICAN SWINE BOOK

BEING A

MODERN TREATMENT OF THEIR DISEASES,

WITH A

HISTORY OF THE DIFFERENT BREEDS.

WRITTEN FROM A PRACTICAL STANDPOINT,

FOR THE USE OF

THE AMERICAN FARMER AND BREEDER.

LIVE-STOCK PUBLISHING COMPANY.
CHICAGO, ILL.

CHAPTER I.

CHARACTERISTICS OF VARIOUS BREEDS

CONTENTS OF CHAPTER.

DIFFERENT BREEDS.—Poland-Chinas—Chester-Whites—Berkshires—Suffolks—Essex—Yorkshires—Cheshires—Jersey Reds.

HISTORY OF THE VARIOUS BREEDS.

POLAND-CHINA.

In the early history of swine-breeding in the Miami Valley, in Ohio, it is clear, from the best authority, that there were two breeds, the Russia and the Byfield. The Bedford breed is also named with the other two. In 1816 we have positive proof that the Shakers of Union village, Warren county, Ohio, purchased at Philadelphia one boar and three sows, pure China, called "big China hogs." The Shakers and other judicious breeders of Warren and Butler counties continued to use the breeds at command, and produced by repeated crosses a hog of exceedingly fine qualities for that period, known as the "Warren County hog." The very best specimens were used so as to make the best crosses. This condition of the breed continued until 1835 or 1836, when Mr. Munson or Beach introduced the Berk

shire, from New York. The Berkshire blood was liberally infused into stock now existing in Ohio, until 1838 or 1839, when Mr. Neff, of Cincinnati, imported some choice specimens of Irish Graziers. This breed soon grew into high favor, and was liberally crossed with crosses previously made. This crossing of breeds continued for some time. In a few years pure-blooded Berkshires were no longer used, and no more Irish Graziers imported. The breeders of swine in the Miami Valley settled down to the conviction that the basis of a good breed of hogs had been established, and, stimulated by their success, they have aimed to improve what they have been so successful in forming. All defective points or qualities have been corrected or improved by care. Thus we have a breed thoroughly established, which can be relied upon for the production of like qualities and character in progeny. The best specimens have good length, short, broad, straight backs, deep sides, very broad, full, square hams and shoulders, drooping ears, short heads, wide between the eyes, of spotted or dark color, and hardy, vigorous and prolific. Their chief excellencies consist in their susceptibility of being well fattened at any age; large growth when desirable, and the great amount of flesh laid on in proportion to the food consumed. They sometimes dress three hundred and fifty pounds when no older than ten or twelve months.

THE CHESTER-WHITES.

The Chester-Whites are a native of Chester county, Pennsylvania, where the breed originated. The first improvement in that county was an introduction of a pair of fine white pigs from Bedfordshire, England, in 1818. They were crossed with common breeds incident to the locality, and by careful breeding by selection of the best progeny and judicious crossing to improve points, the well formed, large, easily fattened Chester-White has resulted. They are a very large, pure white hog, and at eighteen months have weighed as high as eight hundred or one thousand pounds. Spring pigs can be easily made to weigh three hundred to four hundred pounds by the time they are nine months old.

All hogs called Chester-Whites are not of that breed. There are other characteristics besides color and size to be estimated in the true type. Many spurious animals have been sold, owing to the increased demand. Some object to this breed as being too coarse in bone and texture of flesh.

THE BERKSHIRES.

The Berkshires have been a fashionable breed for farmers of this country, there having been much speculative fever in the past, and many importations from England of fine specimens of what were called pure blood. The color is black with white on feet, face, tip of tail, and an occasional splash of white on the arm. A small spot of white on any other portion of the body is not accepted as evidence of impurity of blood, yet the color is generally uniform and markings the same. They are a breed of great muscular power and vitality, with strong digestive powers, being therefore an economical breed to turn the corn of the farmer into marketable flesh. The pigs are smart and active at birth, and not predisposed to diseases of any kind. They are fattened readily at any age, and produce the finest quality of pork. They are not so large as the Chester-Whites, nor the Poland-Chinas, but are superior to the former in quality of flesh.

THE SUFFOLKS.

This breed is not so great a favorite with the farmer, nor so frequently met with as the Berkshire. Popular opinion is that they are delicate in constitution, and not so valuable to cross with other breeds as the Berkshires and others. They are smaller, generally thinly haired, with tender skins, but this is more often the result of errors in breeding by the owner, and might be obviated, as has been done with other more popular breeds. They are a quiet hog, being easily kept in enclosures and fattening readily. For a hog for a mechanic to fatten for his own use he has no superior.

THE ESSEX.

This hog in form and size resembles the Suffolk but in color, which is black, and in constitution, hair and skin, is hardier, thicker

and less delicate. Like the Suffolk, his size prevents his general introduction, as farmers demand larger machines to consume their corn. The flesh of the Essex is beautifully marbled with streaks of fat and lean, and of most excellent quality. The pigs are not so hardy as the Berkshire, and must have more attention during their infantile days to prevent loss.

THE YORKSHIRES.

These are a short-legged, white breed of hogs, not so prevalent in this country as other breeds. They are positive in their crossings, and it would be an improvement to have more of them introduced. They have a hardy constitution, a good coat of hair, and firm skin. They are prolific breeders and fatten readily.

THE CHESHIRES.

These hogs originated in Jefferson county, New York, and it is claimed started from two pigs of this name imported from England. It is likely many of their best traits and features were from the Yorkshires, from which they probably sprung. They cannot be called a distinct breed of fixed characteristics.

THE JERSEY REDS.

The origin of this breed is not positively known. They have been bred in portions of New Jersey for over fifty years. They vary in their color from a dark red to a sandy patched with white.

The characteristics claimed for the Jersey Red hog are, that it is of quick growth, and attains a very large size, often reaching three hundred pounds gross at eight and ten months, and dressing six hundred pounds at eighteen and twenty months. It is docile, and easily kept fat at any age. Its ear is the most objectionable feature, being large and sometimes hanging over the eyes, so as to prevent the animal seeing ahead. Many of them, however, have ears not hanging more than the Poland-Chinas. The color is from dark to sandy red, legs short, face wide and short.

There is, however, another breed of red hogs in Kentucky, known as Red Berkshires. A writer in a Kentucky journal says this breed is

descended from Spain or Portugal importations, made many years ago. It is not absolutely pure as a breed now, but some very fine specimens are often seen. It is popular with the packers on account of its fine yield of lard and its compactness. It is not of such rapid growth as the other red hogs, but it is very popular in some portions of that state.

CHAPTER II.

HOG CHOLERA—ANTHRAX DISEASES.

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HOG CHOLERA—ANTHRAX DISEASES.

THE PROPER NAME FOR IT.

While there has been considerable effort made to give this disease, or more properly, this class of diseases a scientific name, yet the people have tenaciously clung to the term "hog cholera." While "a rose by any other name would smell as sweet," it would be imma-

terial what the name was so it conveyed the right idea, and here is where the difficulty arises. Hog cholera is not a single and separate disease, but a group or class of malignant kindred diseases of a contagious, and also infectious nature, similar to each other in regard to causes, and morbid conditions, yet differing greatly in external symptoms, internal effects, primary seat of disease, duration of attack, yet allied in fatality. Another addition to the confusion has been the calling of every disease of a fatal epidemic character hog cholera, while it did not possess its malignancy, and was clearly diphtheria or quinsy, etc. In order not to add to this confusion of the farmer, we will, in this article, call the diseases hog cholera, but will explain the varied forms and different characteristics, so that he can detect them and make a correct diagnosis for treatment. Quinsy, diphtheria, etc., which are distinct diseases, we treat under separate heads.

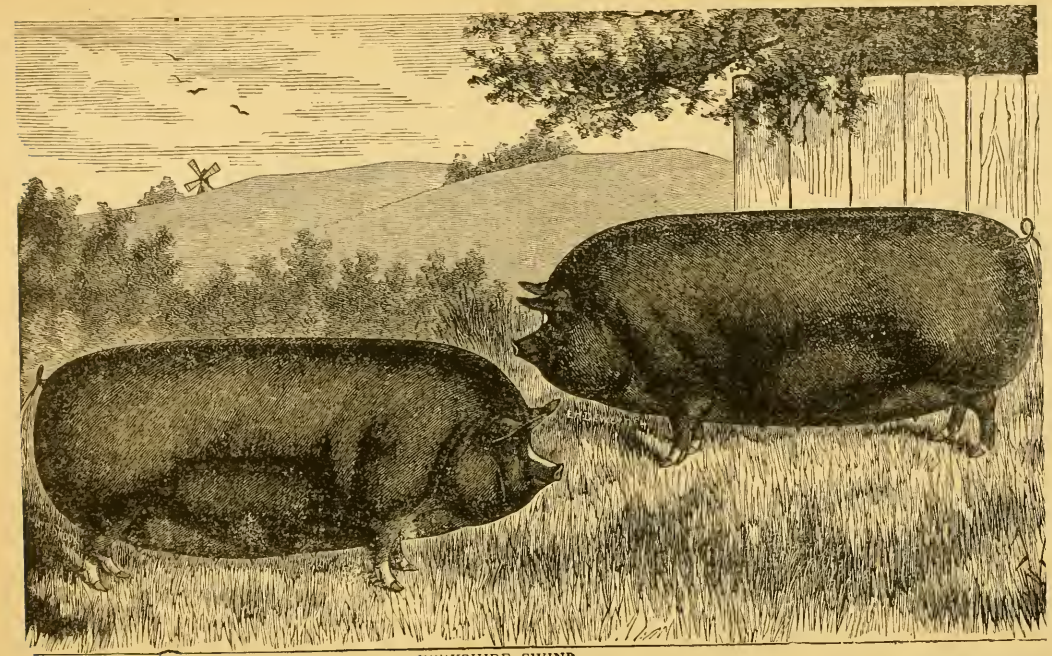
THE ANNUAL LOSS OF HOGS.

In 1877, Illinois alone lost eight millions of dollars worth of hogs, and the annual loss previous to that year was five millions of dollars. The total loss in the United States by hog cholera in 1877, was nearly fifty millions of dollars. Think of this vast sum of money being wiped out of existence, taken from the pockets of the farmers, and that Congress appropriated ten thousand dollars in 1878, among eight men to investigate the causes of the disease. Comment is unnecessary. It is also a lamentable fact that "hog cholera specifics," and the violent nostrums which ignorance could conceive, have added a large percentage to the loss. It was easier to buy the nostrum than to study and understand something about the disease.

PREVAILING CAUSES OF THE DISEASE.

In studying the cause of this epidemic, too much attention has been given to local causes, and not to the artificial condition of the subject or patient. It is an evident fact, whether it be in the vegetable or animal kingdom, that where we force a rapid growth by artificial means, by heat, food or culture, and produce hastened development, we lose in vitality, hardiness and constitution. This is

especially the case in the improved breed of hogs, which now weigh as much at nine months as our old hardy breeds did at eighteen. Another evil has been in errors in breeding. Owing to the high price of pork during past years, the farmers were tempted to select their most thrifty sows for market, because they weighed more and brought a better price, and kept the sickly runts for breeding. Again they were tempted to breed rapidly, and bred from young sows and boars, and thus gave the constitution of their hogs another weak point. Another fact is evident, and that is, that a distinct breed never was originated without in and in breeding, and this very mode of breeding is one of the means of degeneration of physiological stamina which the more surely exposes to all manner of diseases. The hogs that ran wild in the Illinois river bottoms, and which were hunted and barreled every fall for a number of years between 1835 and 1850, were a hardy, tough race that hunted their living the year round, exposed to all the inclemencies of the weather, and whoever saw or heard of a sick hog among them? From roaming at large, unlimited by field, yard, or pen, and being obliged to labor diligently to sustain life and reach maturity, they have been subjected to confinement, fed with milk, corn or cooked food, which were entirely unknown to them in their native state. These have changed or greatly modified some of their physical functions, especially those of digestion; changing his original nervousness to a lymphatic temperament. In a slow change during a series of years the hog has gained much in symmetry of form and in height, but he has evidently lost in stamina of constitution, and the ability to resist disease. A general enervation of the system, with, perhaps, an acquired predisposition to certain kinds of disease, has opened the way for hog cholera and other fatal diseases. We do not assume that the old "prairie rooter" would not be liable to take the disease if exposed to infection, or contagion. It is an undisputed fact that they had constitutions which fortified them against originating such an epidemic. Unfortunately, nature does not insure them a freedom from it, when it originates amid fertile elements, no more than it does human beings from attacks of Asiatic cholera, yet they are not so liable as the improved breeds. Zymotic



BERKSHIRE SWINE.

diseases of this nature, like typhus and typhoid fever in the human family, are propagated by the poison operating on those whose feeble vitality is insufficient to resist the epidemic tendency. So in the lower animals, as we have a forced growth, the bulk of living matter is greatly disproportionate to the vital force, and the power of resistance is correspondingly diminished. Now, if such animals be overfed, or fed on unwholsome food, disease will be generated, and if the fever assumes a typhus character, which it is likely to do, then it will become epidemic, and will be communicated to all animals which have not vital force enough to resist the contagion, if they are exposed to it.

Another cause is found in hogs occupying one field or pen from year to year, without cleansing or plowing under the accumulated filth, having the hog constantly "rung," denying him a taste or smell of fresh earth, or the use of an instinct that teaches him in bilious derangements to search for bugs, worms or vegetable roots, the natural excitants of stomach, liver, and bowels. Another cause is scanty feeding, muddy, stagnant and filthy water, obliging them to allay their thirst often from the draining of their own discharges. Wet lands, during dry seasons, when decaying vegetable substances are throwing out their poisonous miasma, may originate cases which will finally spread over wide sections of the country, where no appreciable local cause exist. Again, a single hog in a large drove may possess the requisite favorable conditions for either developing the disease or catching it by infection, and in turn find among his associates one or two more, just in the condition to develop the disease by actual contact with this sporadic case, as it were, and in turn convey to others. It is a curious fact, that as it spreads in a drove, it increases in malignancy and intensity, as well as contagious character, sweeping like the prarie fire. Understanding this to be the case, shows how important it is that it should be stamped out by the farmer on its first introduction.

Another fertile cause is the high feeding, by a forcing process of kinds of food containing an excess of nitrogenous properties beyond the healthy demands of the nature of the hog. Old, dry corn is an

article of food which can be classed under this head, and will, after a time, produce an inflammatory condition of the system which invites the attack of pernicious fevers of this type. Hogs which are apparently the most healthy, the most thriving, which are hearty feeders and good digesters, are the most liable to attacks of this kind. This condition of plethora is why the finest and most thrifty young cattle are subject to the anthrax diseases, of black leg, quarter evil, black tongue, bloody murrain, etc., as they are popularly called. It is the same with the hog, and food of this character should be varied by an intermixture of sloppy articles, boiled roots, boiled oats, etc., of a cooling and loosening nature to avoid this peril, yet keeping the hogs fattening at the same time. Again, there is confusion among those who have large pastures, do not feed but a limited quantity of corn, and yet these hogs die apparently under the most favorable hygienic conditions. This shows how the form of the disease varies under different circumstances, and is produced by different causes. The evil here is not nitrogenous food, but in the direct other extreme, and here is an instance, apparently, where extremes meet. Many will probably remember that there was an increase of the fatality and virulence of the disease among those of weaker constitutions, when they suddenly increased the green food, by feeding green corn, or turned their hogs into clover pasture, rich with rank aftermath, or where the hogs had access to stubble-fields, rank with weeds, during a warm and wet season. By this system of feeding, the digestive and assimilative powers were weakened, followed by disordered bowels, generally extreme diarrhœa, and sometimes succeeded by costiveness or the reverse process, as is the case in the human family. A change of food, shutting up in pens, and giving a gradual increase of dry, nutritious food, has checked this form of the disease, which is not so malignant, unless it has greatly increased in numbers, and therefore in malignancy by increased ratio. These are merely two extreme illustrations of errors in feeding, combined with favorable conditions, which have resulted in hog cholera, and there are many intermediate stages.

HOW THE DISEASE SPREADS.

It has been a great mystery to the farmer how the disease spreads from place to place without apparent actual contact. It was like fighting in the dark to attempt to prevent it, and many gave up in despair and stoically awaited its coming, or after a few cases had occurred, with a spasmodic effort to cure by vaunted hog cholera "specifics," ceased all remedies or precautionary measures, saying, "what will die, will die, anyway." There is no doubt but what it is, under favorable conditions, infectious, and conveyed by germs or spores in the air, or by persons from infected places. It is a common matter for neighbors to visit each other and to examine the sick hogs during epidemics of this kind, which no doubt materially assists in spreading the disease. This would not be so in cases of highly contagious diseases among mankind. It is most difficult to draw the dividing line between the epizootic nature of the disease and the contagious forms. There is no doubt but what the infectious nature of the disease may, under pre-disposing conditions of local causes, etc., take the contagious form, which is far more malignant, sweeping and fatal in character; that a few sporadic cases may occur in a drove, which, if neglected, may so increase in numbers and virulence as to become highly contagious. This contagious matter is of a fixed character, and is present in the blood, the discharges, and of course in the place inhabited. It possesses great vitality and resistance to ordinary destroying influences; neither heat, cold or moisture in natural forms seeming to affect it. Its intensity seems also to vary according to the form and malignancy of the disease. The period which elapses between exposure to contagion and its attack is not always the same, varying with the form the disease assumes, from a few hours to few weeks. As we have stated before, an infectious case may become a malignant, contagious disease, and one form of the disease does not necessarily impart the same type to another, but more depends on the primary seat of the disease in the patient. It may take the internal enteritic form, or the external carbuncular character. It may localize its attacks on certain organs with well

defined symptoms, which are more prolonged in its results; or it may affect the whole organization, and destroy life in a few hours.

PREVENTION OF THE DISEASE.

While hog cholera or anthrax diseases thus vary in form and intensity, yet the methods for the prevention of the disease remain the same. When we speak of prevention, we mean hygenic measures and the use of disinfectants for destroying contagious matter, and not dosing with drugs in vain hope of making the hog cholera-proof by deranging the stomach and bowels with doses of antimony, copperas, madder, and a thousand and one things which have killed a very large share of the hogs said to have died of the cholera. There are certain articles which can be used with advantage, they possessing the power of destroying germs of the disease. None are better than chlorate of potassa, carbolic acid and sulphite or hyposulphite of soda, which may often be used with success, if other measures are not neglected. If they are freely used, as we have directed elsewhere, they will prove successful, as "an ounce of preventive is worth more than a pound of cure." First of all, avoid as far as possible all causes of this malady. Never forget that hog cholera is a contagious disease; therefore keep your animals away from flocks amongst which the disease exists, also from particular grounds or localities where the malady is of frequent appearance. If the disease is discovered in your own flock, separate the sick from the well, and disinfect all their discharges with carbolic acid. The crude acid is cheap, and should be mixed in proportions of a pint to a pail of water. It is better to confine the sick in separate pens, isolated if possible, and to clean the pens daily, burying the discharges where hogs can have no access, and then to thoroughly wet the pen from whence they have been removed with this solution of carbolic acid. The troughs should also be scalded out with hot lye, or ashes and hot water, and sprinkled with the carbolic acid solution above. The food will vary with the form of the disease, if previous feeding and care have induced the attack, and should be gradually reversed, and in moderate quantities; fresh and clear water, fresh air and good litter; in fact, cleanliness in

every respect is the best preventive for the disease. A few large pieces of rock salt should always be kept in the hog-pen, and throw occasionally some charcoal into the pen. Let the hogs have plenty of fresh water, but never run them to or from watering. Don't force your hogs to drink snow water if you can procure better water for them. In hot summer time keep your hogs under shelter during the hottest hours of the day, (from 11 to 3 o'clock) especially if hog cholera is prevailing; during which hours, if practicable, and after the hogs are cooled off, give them a good sluicing with cold water, which repeat before letting them out in the afternoon. Unripe fruit and sour milk and water is a good diet on hot days, but the hogs should not be given all they can eat at one meal.

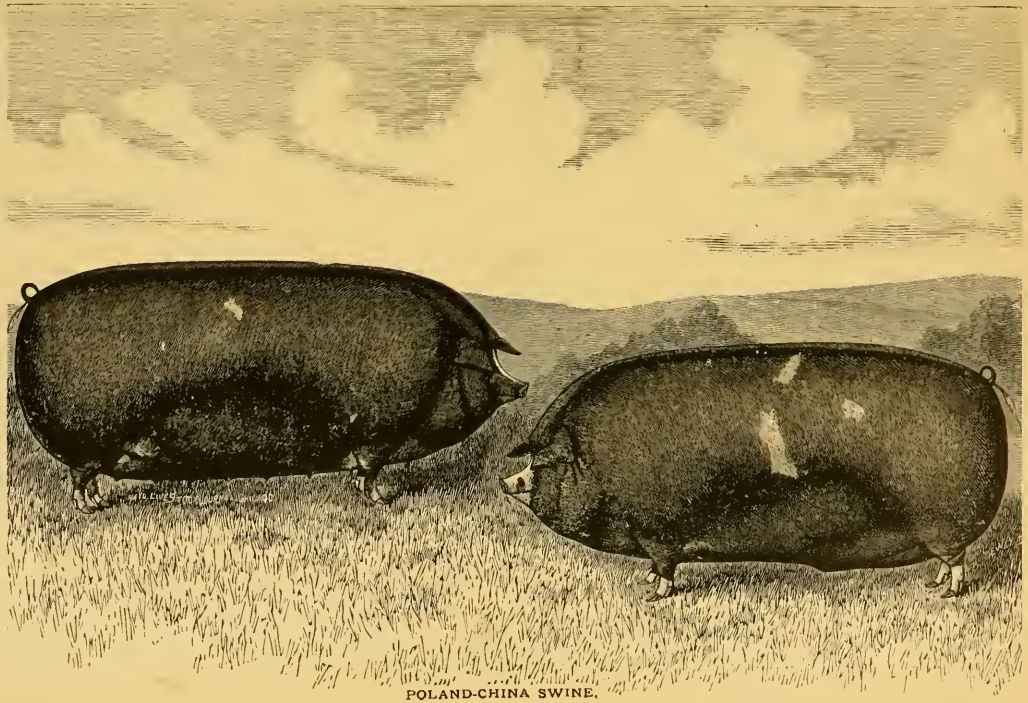
THE TREATMENT OF THE DISEASE.

Some common-sense has been written by professional veterinarians, but a greater amount of nonsense has been given to the people through the papers, written by parties who have not the proper facilities nor the skill to investigate and understand the morbid processes of the disease, who have vainly sought for some specific remedy, who have jumped at conclusions, conceiving that ignorance could find the "cure all" for the disease which science could not. When these persons, and farmers at large, understand that it is not a single disease, but kindred types, all produced by the same specific blood-poisoning, and that one of the prevailing conditions is a disorganization and breaking down of the atomic condition of the blood; that in this and other features it resembles typhus fever in man; and, as in the case of typhus fever in the human family, the symptoms of the disease are various; but that it is always attended by more or less of fever, sometimes alternating with apparent chills; that in some cases the deranged condition of the intestines produces diarrhœa, and in others costiveness; that in the chilly fall and winter it is liable to lung complications; that dark colored spots on various portions of the body are common externally; that it may also assume an erysipelous and gangrenous form; then they will see the futility of trying to find a specific remedy which will "cure" the disease, and stop buying

recipes, which apparently have been successful in some instances, yet are sure to fail. When people remember that we have no specifics for these diseases in the human family, it will be good common sense not to expect it in the porcine family. If farmers will only learn the prevailing types and symptoms of this disease and the proper remedies to be used during each, how and when to use them, and will follow it up according to directions, they will be successful. They must remember that it is necessary to commence at the first symptoms in the first cases, and keep up the fight till it is stamped out on the farm. If it is too much trouble, no further advice is necessary. We give below the symptoms of the various types of this disease, and the most successful methods of treating the same, which have been successful whenever faithfully tried. If the directions are carried out which have been given in this chapter, there need be no epidemic form of the disease. It can be controlled and wiped out, and never get beyond a few isolated cases. The treatment, as well as the hygenic advice, is from the pen of a celebrated government commissioner, appointed to investigate the causes and treatment of the disease, and has been very successful:

PUTRID ERYSIPELAS — MALIGNANT TYPHUS.

This is one of the most frequent forms of anthrax. Its outbreak is preceded by dull, weak appearance, during which the hog refuses food. There will be an unsteady walk, a lying down a good deal, rolling in the bedding, and showing a desire to bury his head, or even the whole body. The body will alternate with shivering fits and periods of feverish heat, in quick succession. The pulse and breathing will be hastened, the bowels are constipated, or are voided in hard dark-colored lumps. In some cases the hog will attempt to vomit. In about ten to twenty-four hours the symptoms become more intensified; and spots which soon become confluent, or run together, make their appearance on the inside of the legs, on the lower part of the abdomen, on the breast and neck, and soon present a swelling, which at first is crimson, afterwards purple, and if fatal, finally of bluish-black color. In some cases pustules of a corrosive and gangrenous



POLAND-CHINA SWINE.

character make their appearance on some parts of the swelled surface; the fever increases in intensity; the mucous membranes present a lead-colored appearance; the breathing is labored; the temperature of the body much increased at first, is now, by collapse, greatly reduced; the hindquarters are paralyzed; convulsions commence; and the animal dies in from six to twelve hours, yet it usually does not terminate until the second or third day from its commencement. When recovery occurs it is in those cases where the red spots are limited or do not run together; when the fever is less; and the other symptoms abate about the second day. Partial paralysis may remain, with loss of appetite, so that it is difficult to get the animal to eat enough to sustain life. Perfect recovery is seldom, and there remains behind defective digestion, which prevents thriving and fattening.

THE TREATMENT OF THIS FORM.

The first step should be to give an emetic consisting of from five to twenty grains of white helebore in a little milk. If the hog will not drink, it may be mixed with a little flour and water in the form of a pill, and put well back on the tongue or in the throat. If the animal does not vomit freely in twenty minutes, repeat the dose. After the emetic has had its effect, administer to each hog:—

Hyposulphite of Soda, half an ounce;
Solution Carbolic Acid, ten drops;
Tincture of Aconite, five drops.—Mix.

Add enough of molasses to make a soft mass, and place well back in the throat. If the hog will eat, it may be given in a small amount of milk. For a number of hogs increase in proportion; give to all at once in milk. This treatment should be commenced early in the disease, when it will be most successful, and should be repeated at least three times daily, or even every two hours. Injections of warm soapsuds, to which half an ounce of turpentine has been added and ten drops of carbolic acid, may be given twice daily, and materially assist a cure. The external ulcerations, on the surface of the swellings, should be opened and bathed in warm water containing half a fluid ounce of carbolic acid solution to a pint of water. Muriate of

ammonia in half drachm doses in a little molasses, is an excellent remedy in the latter stages of the disease when signs of a collapse are present.

MALIGNANT PUTRID SORE THROAT.

This is a frequent form of the disease, and is very fatal in its character. It is more local in its attack than the previous form, and affects the throat, larynx, air passages, etc. It may mainly affect the larynx, or it may be more diffusive and involve the adjoining parts, even into the cavity of the chest, with great congestion of the lungs. The external swellings on the throat vary with different subjects, and the breathing is obstructed in proportion to the amount of congestion and its location. While its extent may vary, yet it is the same type of the disease. The principal symptoms consist of wheezing and laborious breathing, hoarse grunting, hacking cough, great heat and dryness of the snout, swelling of the tongue, brown-red color of the mucous membrane of the mouth, difficulty in swallowing food, with attempts to vomit, showing affection of the stomach. At the larynx and along the windpipe, even extending down between the fore legs, will be found a hot, hard, painful swelling, which at first presents a crimson appearance, which may change to a lead color, and finally to a dark purple. The fever is usually very high, and the animals breathe with increasing difficulty, and either lie down or sit on their haunches like a dog. Finally the difficulty of breathing becomes so great that desperate attempts are made to catch the air by opening the mouth, during which the livid and swollen tongue is protruded. The mucous membrane of the mouth is now lead-colored; the temperature of the body has become lower than natural, and the hog may either die of strangulation, or gangrenous action internally in the throat and lungs as well as external, in one or two days. In those cases where the attack is concentrated in the larynx the patient suffocates sooner, and may choke up and die in an hour after the first appearance of the symptoms. If it does not terminate in death, which is the case if not attended with proper treatment early, the symptoms are reduced gradually, the swellings are absorbed, and the animal partially re-

covers. Often the later stages show those peculiar symptoms of oppressed breathing and heaving of the flanks, commonly called "thumps."

ITS TREATMENT.

To be of any avail, the treatment must be begun at the very first symptoms shown. An emetic of ten to twenty grains of powdered white helebore may be given in a little milk, or mixed with a little flour and water, and placed on the roots of the tongue. If it does not vomit in twenty minutes, repeat the dose. After the emetic has had its effect, give the following, three times daily: —

Hyposulphite of Soda, half an ounce;
Muriate of Ammonia, half a drachm;
Molasses to make a mass.

Place on the tongue. Five drops of tincture of aconite dropped on the tongue during the early stages of the disease, when the fever is high, is of great assistance. In addition, the prescription below should be used in the manner prescribed. If it does not all go down the throat, it will do much good as a local remedy: —

Chlorate of Potassa, three ounces;
Solution of Carbolic Acid, half a fluid ounce;
Water, one quart.—Mix.

Give this every hour, or even every half-hour in bad cases, in tablespoonful doses, with a tablespoon. It is an excellent application for the inflamed and ulcerated throat, as well as a powerful antiseptic and refrigerant. As the hog gets better, the periods of administration can be lengthened, or chlorate of potash can be given in his food. When this disease is present on a farm, the best preventive is twenty grains of chlorate of potash to each well hog, in a little milk, before feeding in the morning. An ounce will do for twenty-five hogs, and all be fed at once. It will frequently arrest the disease before it is recognized, and is one of the best preventives known for this form. Ten drops of solution of carbolic acid every other day, for each hog, assists its preventive power by destroying germs of the disease. It will have a better effect if the hogs are fasted some hours before, and not fed for some two hours after giving.

TYPHOID ENTERITIS — INFLAMMATION OF BOWELS.

This form of the disease partakes somewhat of a typhoid character, regarding its internal results. Its locations are the bowels, the urinary organs, the membranes lining the abdominal cavity, as well as the nervous centers. All may be involved, or but one or two in the primary stages. When the peritoneum is involved, which is almost invariably the case, there will be costiveness, the passages being streaked with mucus, which may be discolored. In the fatal stages of the attack, a fetid diarrhœa may succeed, which is the forerunner of death. The first symptoms are a short, hacking cough in some instances, not so much obstruction in breathing as in the other forms. There will be an unsteady walk, with fully as high fever as is found in the other forms. If the urinary organs are affected, the animals will arch their backs in an extreme manner. The external extravasation in these cases is slight, and may be absent entirely. When the nerve centers are involved, paralysis will result. Internally there are adhesions of the intestines, alteration in the kidneys, liver, etc., with effusion of abdominal cavity.

ITS TREATMENT.

In this form of the disease an emetic is of greater value than in the preceding forms, and should be given in the manner indicated. When there is costiveness in the early stages, which is nearly always the case, a purgative is needed, none being better than calomel, which may be given in doses of one scruple every six hours until it has its effect. It may be given in a little flour and water as a pill or in a little milk, if the hog will eat. Injections of warm soap-suds, to which half an ounce of solution of carbolic acid may be added, will aid its effects. During the early stages of the fever, drop five drops of tincture of aconite on the hog's tongue, every two hours. In addition to this the following prescription should be given after the calomel has had its effect, or may be substituted for it in the early stages: —

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Hyposulphite of Soda, one-half ounce;
Chlorate of Potassa, one scruple;
Molasses to make a mass.—Mix.

Give three times daily, using the aconite as directed, between the doses. Half a drachm of muriate of ammonia may be given at a dose if symptoms of failing strength are present. Mashes and sloppy food, not soured or fermented, should be given. All remedies will have better and more immediate effect by fasting the hogs twelve hours previous.

CHAPTER III.

MISCELLANEOUS DISEASES OF HOGS.

CONTENTS OF CHAPTER.

DISEASES OF THROAT AND LUNGS.—Quinsy or Strangles, sometimes called Hog Cholera—Diphtheria, which is also Epizootic—Pneumonia or Inflamation of the Lungs—Cough—Catarrh in Pigs—Sniffles—Their causes, symptoms and treatment.

DISEASES OF THE STOMACH, BOWELS, Etc.—Diarrhœa or Scours in Pigs—Constipation in Hogs—Kidney Worms and Intestinal Worms—Piles in Hogs—Protrusion of Rectum or Bowel in Pigs.

MISCELLANEOUS DISEASES.—Paralysis of Hindquarters—Apoplexy in Fat Hogs—Thumps or palpitation of Heart—Blind Staggers—Scrofulous Disease—Rheumatism—Black Tooth—Lice on Hogs—Mange on Pigs—To prevent Sows Eating their Pigs.

OPERATIONS.—Spaying Sows—Altering Ridgling Boars—Castrating Ruptured Hogs—Prevention of being Fly-blown.

DISEASES OF THROAT AND LUNGS.

QUINSY — STRANGLES — HOG CHOLERA.

This disease sometimes assumes an epidemic form similar to distemper in young horses, and proves fatal to large numbers of young pigs as well as older hogs. We have known it to assume so fatal a form as to be called "hog cholera" by those ignorant of its distinguishing type, yet it differs from anthrax diseases in not being so malignant, and in other respects.

The first symptoms are swelling of the glands under the jaw, followed by rapid and oppressed breathing, and difficulty in swallowing. In the more advanced stages the neck is badly swollen, the tongue protrudes and death is caused by strangulation. Often the swelling takes the gangrenous form and becomes allied to anthrax. Quinsy is caused by exposure to sudden changes of atmosphere, and if the animal has been under the debilitating influence of bad food, impure water or filthy enclosures, mortification frequently sets in, and death results in a few hours. Allowing hogs to pile up around old straw stacks, during cold nights, is a pre-disposing cause. Any one who has seen hogs routed out in the morning, and observed how those underneath smoke and steam as they come forth and the cold air strikes them, must realize that such sudden changes produce inflamation of the lungs, quinsy, diptheria, etc., of a fatal type, resulting in the popular "hog cholera."

Young pigs are very liable to be attacked with quinsy. They should be kept in warm, clean, well-ventilated pens, with plenty of clean straw; let them have a mess of thin gruel three times a day, into which stir one-half ounce of chlorate of potash. If the bowels are constipated, from one to two ounces of castor oil may be given each pig. In bad cases the throat may be lubricated with equal parts of cod-liver oil and turpentine.

In older hogs, also in pigs, benefit may be had by giving each hog an emetic consisting of four grains of tartar emetic, six grains of ipecacuanah and six grains of white helebore; half this dose for young pigs. Often a deep incision into each tumor, on each side, will relieve it. Not a mere puncture with the knife, but a cut two to four inches long, and deep enough to reach the seat of the disease. Feed thin gruel for a few days, in which a teaspoonful of turpentine may be incorporated. Three to four drops of tincture of aconite dropped on the tongue every two hours is excellent in the early stages of the disease.

DIPHTHERIA — HOG CHOLERA.

This disease is far more prevalent than most people imagine who class all epidemics or contagious diseases under "hog cholera."

During 1878 it was very fatal through some portions of Indiana. It not only attacks pigs, but older hogs. It is, in a certain degree, contagious, that is, by contact with the shreds of the false membrane coughed up by those attacked, well hogs will take the disease as readily as it is communicated by the human family. It sometimes takes an epidemic form in localities owing to atmospheric causes, local condition of filthy pens, and wet pastures during inclement seasons of the year. Its symptoms are sudden illness, with a dull appearance and loss of appetite. There will be extreme weakness, feverishness, stiffness of back and loins, a crouching walk with raised head. The mouth will be dry and open, a hoarse nasal grunt, livid tongue and difficulty in breathing. On examination internally, the throat will be red and swollen, and covered with grayish-white patches of false membrane, which increase, involving all the air passages and threaten suffocation. Shreds of false membrane are coughed up during paroxysms of coughing. The animal will lie down, sit on its haunches, or lean against the fence during these attacks of coughing, and will generally perish in one.

The treatment, to be successful, must be begun early in the disease. If the drove is ranging in cold, wet pastures, they must be changed into dry yards and sheltered pens, and the well separated from the sick. Give each of the well hogs a spoonful of chlorate of potash daily in a small quantity of milk. The whole amount can be given at once by proportioning it to the number of hogs. This will prevent its spread and arrest its incipient stages. The sick must have local as well as constitutional treatment. In the first place give the following to each hog, daily: —

Sulphite of Soda, two drachms;
Powdered Castor Bean, one drachm;
Solution Carbolic Acid, five drops.—Mix.

Give in swill to those which will eat, increasing the amount proportionate to the number of hogs. To those which cannot eat, it may be given by mixing with molasses and smearing on the back of the tongue. To remove the patches of false membrane and prevent further formation, prepare a small swab of sheep-skin with the wool

on, and a flexible stick, well secured, and dipping it in the following solution, swab out the throat twice daily:—

Chlorate of Potassa, one ounce,
Solution of Carbolic Acid, two fluid drachms;
Water, one quart.—Mix.

Its virtues can be materially aided by sprinkling the swab with flour of sulphur before inserting into the throat. We have never known it to fail. Warm, sloppy food may be given, to which chlorate of potash may be added in teaspoonful doses.

INFLAMMATION OF THE LUNGS.

This disease is always caused by sudden changes, exposure to storms, piling of hogs during cold nights, etc. The pig, or hog, is taken with shivering fits, is dumpish, is drawn up in a heap, as it were, loss of appetite, hurried and short breathing generally accompanied with a cough, which is deep and hoarse. It is an inflammation of the cellular portion of the lungs. If the bowels are constipated, loosen by injections of warm soap suds. At the same time give, according to size, a half to two drachms of saltpeter, and one to three ounces of Glauber's salt. After six hours, and then thrice daily, one powder of the following composition should be thrown on the tongue, viz:—

Tartar Emetic, twelve grains:
Powdered Opium, twelve grains;
Saltpeter, one ounce a half;
Mix, and divide into eight powders.

When the inflammatory symptoms have abated, half drachm doses of sal-ammoniac thrice daily for several days, are very beneficial. The patient should be separated from the rest of the herd, and given a warm sheltered pen, plenty of litter, water and slops which have been warmed, consisting of gruel, sour milk, etc. It is better to so manage your hogs as not to have to treat it, as prevention is far easier than the cure; yet it is often "too much trouble."

COUGH.

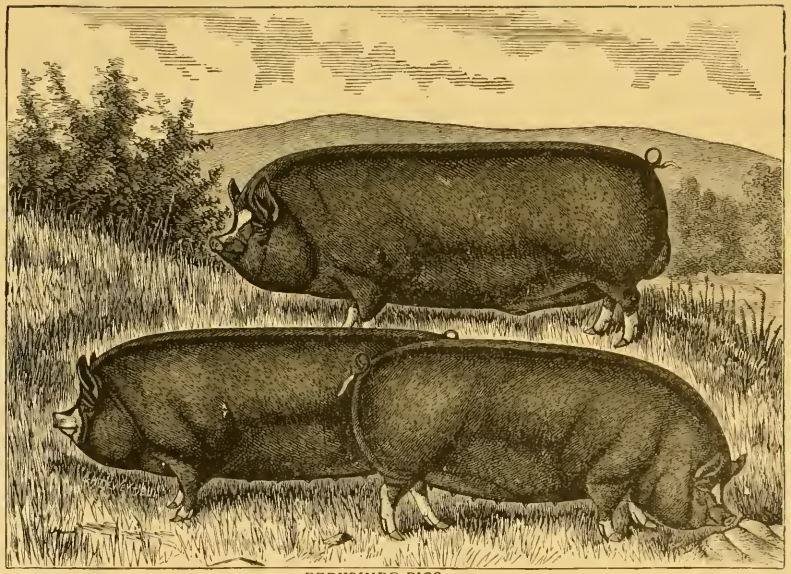
This is sometimes a symptom, and sometimes a local irritation. It is a premonitory symptom of one form of "hog cholera," which is

really pleuro-pneumonia, and from its character and obstruction of the lungs in its later stages, is called "Thumps." This is especially the case when dropsy of the chest has resulted. When there is costiveness, it must be removed by two to three drachms of powdered castor bean mixed with molasses and smeared on the back of the tongue. One very successful breeder puts a ball of tar on the end of a paddle and places it well down their throat, for four successive mornings. Or, one grain of tartar emetic mixed with a small quantity of molasses, and smeared on the roots of the tongue, is an excellent remedy, which should be given every day for three or four days. Small quantities of swill, to which has been added a teaspoonful of chlorate of potash, may be given daily.

CATARRH — SNIFFLE DISEASE IN PIGS.

This is a lymphatic-catarrhal affection which always takes on a chronic character. It develops slowly, and is generally not noticed before the disease is considerably advanced. It begins with an inflammation of the mucous membrane lining the passages of the nose, which, together with adjacent parts, become more or less swollen. In course of time, disorganization of the cartilaginous and bony structure of the nose takes place, and by degrees that organ becomes malshaped, and is generally drawn to one side. As the disease farther advances, appetite diminishes, and even on the best keep the animals become poor and emaciated, and a hectic fever or general consumption often ends their existence. This so-called sniffle disease is not frequently met with. It is supposed to be hereditary; at all events of a scrofulous nature. By way of treatment, the animals should be kept comfortable, on dry litter. Diet should consist of milk, boiled food, oatmeal gruel, boiled barley, mashed fruit, cabbage, etc., in short, food which does not require hard chewing. If bowels are constipated, give occasionally half an ounce of Glauber salts and a drachm of saltpetre mixed with some honey or treacle, and smeared well back on the tongue. Give, every other week, thrice daily, the following dose to each pig: —

Sal Ammoniac, half a drachm;
Camphor, eight grains;
Mix with a little treacle,



BERKSHIRE PIGS.

and smear on the tongue. If swelling of the nose should appear, and the same be painful, it may be bathed daily with a solution of one part of Goulard's extract, and ten parts of soft water. When the disease is advanced, any treatment will prove unsatisfactory.

DISEASES OF STOMACH AND BOWELS.

DIARRHŒA — SCOURS IN PIGS.

Many thousands of young pigs die yearly from this disease, yet it may not take an epidemic form. There is hardly a farmer who escapes loss of this kind. It may attack merely one or two out of a litter, and seem to be isolated cases of derangement of digestion, or it may attack a whole litter when one or two days old. Few people understand that this latter form is invariably caused either by what the sow has eaten, or by the method of feeding, altering the character of her milk, and thus affecting the pigs. Too much green clover, or any other green food, will do it; also strictly feeding dry corn, or musty, decayed food, will produce it. While the food given the sow may thus affect the pigs, she will apparently suffer no constitutional disturbance and be as well as ever.

Often a teaspoonful of sulphur administered to the sow in a little milk, twice each day, between the times of feeding, will produce a cure combined with care in feeding, and nothing be given to the pigs. If necessary to give the pigs remedies, there is nothing better than two or three drops of laudanum each, in a little sweet cream, administered with a teaspoon, twice daily. Change the food of the mother and see that it is of good quality. Keep the pigs in a warm, close pen, with plenty of litter, and do not allow them to run at large, but rest as much as possible. All the discharges must be scrupulously cleaned out of the pen, and the places covered with fresh earth as a disinfectant. Scald out the troughs and feeding places with boiling water to which ashes or lye has been added. If these precautions are taken it will disappear. If the pigs will eat, a few drops of the solution of carbolic acid may be added to the food of each pig.

CONSTIPATION.

It is never best to allow either stock or fattening hogs to become constipated. It denotes a feverish condition of the system, which easily becomes the first stage of some inflammatory disorder. The food should be so varied, without the use of remedies, as to prevent it. Green food is the best, or some milk or swill, to which may be added two ounces of Epsom salts for each hog, if the trouble is present. Often a cough is heard which will disappear when costiveness is removed. Stock hogs which have been running loose all summer often become seriously troubled in this way, if they are confined, and fed on dry, hard corn, preparatory for market.

KIDNEY WORMS.

Kidney worm is not of so common occurrence as people seem to believe. The presence of the worms in the spinal canal, or in the spinal marrow, may produce paralysis of the hind quarters, in which case the animal would not exhibit any such marked tenderness, on being pressed over the loins with the fingers as he would if the weakness of the hind quarters was due to a sprain or to rheumatism of the loins. Occasionally hogs may suffer from the presence of one or more worms in the kidneys; but the ailment is rarely fatal, and becomes so only after a long time of suffering and consequent disease and degeneration of one or both kidneys; it is next to impossible to diagnose the presence of worms in the kidneys of hogs, except by chance through microscopic examination of the urine. If worms are found in the kidneys of a hog that has either been slaughtered for food or died from some disease, it may then be supposed that others of the same herd, "not acting right," are infected with worms of the same species. In such cases, treatment (which is, at best, of questionable utility) may be instituted, and Fowler's solution of arsenic may be given in doses of a teaspoonful, morning and evening, during every other week for some time, to each hog. The loins also may be rubbed with spirits of turpentine every other day, and during the week when the solution of arsenic is suspended, a teaspoonful may be given every other day in its swill.

INTESTINAL WORMS.

When swine are infested with intestinal parasites they generally become unthrifty, will not fatten, and have voracious appetites. They cough, scour, start from rest or sleep with a sharp cry, scream excessively before feeding time as though they were nearly starved, vomit, and pigs sometimes have choking fits from knotting of worms in the throat. Oil of turpentine, two drachms in milk, given for six mornings in succession, then followed by a dose of one scruple of calomel to each, as a purge, is one of the most effective remedies. If calomel is objected to, two to three drachms of powdered castor bean may be given instead. Half these doses for pigs.

PILES IN PIGS.

Piles may appear in hogs as well as in other animals; but unless the knots are visible externally, they are seldom discovered in this animal before the disorder has so far advanced that blood passes off with the excrements, or the hair around the anus is blood-stained. The disease is generally considered incurable in animals, in so far as treatment can only be of temporary benefit, on account of the impossibility of enforcing the necessary hygenic rules and restrictions. Enlargements of the veins will appear again from the least cause. Moreover, the disease is of no dangerous consequences when not connected with any very material alterations, or attended with considerable general changes. Curative treatment consists in an entire change of food. Sour milk, and especially light digestible substances, and, with a view of relaxing the existing state of costiveness, injections of vinegar and water, or, when considerable pain exists, of oily substances, and the internal administration of castor oil, or sulphur with cream of tartar. In case of prolapsus of the bowels, caused by piles, warm fomentations of decoctions of white oak bark, previous to replacing the gut, will be of service, and, should the presence of large piles prevent replacing, these should be injected by the use of a hypodermic syringe, with a mixture of equal parts of carbolic acid crystals and olive oil. If the anus appears very much swollen, applications of

oily or greasy substances would be beneficial in relieving pain and irritations. Laudanum may be added which will relieve the pain earlier.

PROTRUSION OF BOWELS IN PIGS.

This trouble is often caused by continued diarrhœa in pigs with a lack of tone in the parts, in fact, debility. In the first place, wash the part with warm water, then apply a solution of sugar of lead and water, a drachm of lead to a pint of water, to which may be added a little laudanum, and gently press the part back, pushing up the finger a short distance. Three to five drops of laudanum may be given each sucking pig.

MISCELLANEOUS DISEASES.

PARALYSIS OF HINDQUARTERS.

This affects both young pigs and older hogs. Some think it is caused by worms in the kidneys. This is not always the case. It is true that the presence of these parasites around the kidneys may cause irritation of the nerves of the spinal column and result in paralysis, yet it more often is a weakness and loss of nervous power in these parts. The symptoms in either case, for they cannot be distinguished apart, are weakness of the back, wriggle of the hind parts, and finally they set down on their haunches; after some effort they get up, and run in a straight line quite fast, but swing to one side for a while, and then go over to the other side, and finally, get down so that they cannot rise, but can drag themselves about. The appetite is good until a day or two before they die.

There is no better remedy for constitutional treatment than nux vomica, or its alkaloid, strychnine. Apply over the loins a liniment composed of one part of cantharides, two parts of olive oil, and two parts of oil of turpentine. Internal treatment should begin with a laxative consisting of three drachms of powdered castor oil seeds, and eight ounces of rye flour, mixed in a quart of sour milk, or thin

gruel, and let the animal drink it first thing in the morning. It may be repeated once a week. Half of the dose will suffice for young pigs. The following internal treatment may be repeated twice or thrice daily:—

Powdered Nux Vomica, four grains;
Powdered Anise Seed, half a drachm;
Powdered Ginger, half a drachm.—Mix with a little treacle,

and smear the dose well back on the tongue. Half this dose for pigs under three months old. Feed sloppy or steamed food, and give plenty of sour milk and fruit. Treatment of all such cases requires considerable patience and perseverance, and recovery is slow and often uncertain.

APOPLEXY.

Fat hogs are liable to attacks of this disease if they are heavily fed by a forcing method, especially in warm weather. They appear dumpish and out of sorts for a few hours previous to an attack, and drop as if shot, having all the appearance of death, with the exception of heavy breathing. The quickest method to bring back sensibility is to bleed. By tying a cord around the fore leg above the foot, the artery will be seen to fill above the knee, on the inside of the leg, and can be opened with a sharp knife. A pint to a quart of blood should be taken. If the hog revives, as soon as possible give some thing to move the bowels, either by injection, or by mouth, or both. Light food only should be given for some days thereafter.

THUMPS — PALPITATION OF HEART.

There is a common error prevalent, that the short, thumpy cough at the commencement of inflammation of the lungs is thumps. True "thumps," which is but the vulgar name for palpitation of the heart, is more of a nervous character, and is, in fact, a sign of debility and nervous derangement. This will be seen by the paroxysm being easily brought on by anything startling the animal. Its treatment is careful feeding on slops, a separation from the rest of the drove, and from two to ten grains of digitalis given twice daily in a little molasses, which can be smeared on the roots of the tongue with a paddle.

BLIND STAGGERS.

The attack is generally preceded by dullness for a day or so, with apparent tendency of blood to the head, which will be shown by inflamed eyes. The bowels are constipated, and the pulse hard and quick. If not relieved during this stage of the attack, the animal runs wildly about, generally in a circle, appears blind, will run against objects, breathing laboriously, and often dies during one of these fits. Often it is caused by indigestible food; feeding young pigs on dry corn, when they should have a mixed and sloppy diet. It is more often caused by a fit of indigestion, combined with costiveness, and can be relieved by getting the bowels to acting freely, early in the disease, by injection of warm soapsuds, accompanied with three drachms of pulverized castor bean, mixed with molasses and smeared on back of the tongue. Or, a teaspoonful of calomel may be substituted. Cold water should be frequently dashed on the head, while along the spine may be applied turpentine or kerosene oil well rubbed in. Sulphite of soda may be added to the injection, and will materially add to its rapidity, and turpentine in small quantities added to the injections will have a stimulating as well as local effect.

SCROFULOUS DISEASES.

This is shown in young pigs by weakness of the joints, knuckling over, and reeling when walking. There seems to be a softening of the bones, or rather, the assimilation of the constituent parts of the bones is deficient. Ulceration may take place externally, near the joints, diarrhœa may be present, and in young animals the navel string may remain open, through which urine will dribble. In older subjects it may take the form of tuberculous consumption. The lungs becoming diseased, and the liver full of tuberculous lumps. As the prevention of an evil is generally considered cheaper and more certain in its effects than an attempt at cure, it is evident that, in a disease of this kind, that is practically incurable, the cheaper and safer plan would be, to discontinue breeding from stock thus affected. The treatment of scrofulous disease in the hog, as well as other domestic animals, when in an advanced state, is generally unsatis-

factory. In young and robust animals, the disease, when taken in hand in its earliest stages, is more amenable to treatment; but often the supposed cure only consists in amelioration of the same, which in effect is only a temporary stopping of its progress. The best of care and the most nourishing food, as well as scrupulous avoidance of all causes tending to superinduce disease, are essential, besides the administration of tonic medicines. The practice in ordinary cases of diarrhœa, is to withhold all succulent food, and to give dry nutritive food instead. By way of medication, aromatic and astringent remedies are generally beneficial, their administration being preceded by a laxative dose of olive oil from one to three ounces, according to age. Then three drachms each of powdered catechu, ginger and gentian, mixed with two ounces of treacle, should be smeared upon the root of the tongue morning and evening. Alum whey is a useful preparation, especially for small and weakly animals. It is prepared by boiling together, for ten minutes, one ounce of alum and a gallon of milk; when strained, half a pint may be given to each hog twice a day. Thin wheaten flour gruel may be allowed the patients to drink, when dry food is refused. Cod liver oil may be given daily, among a little gruel, which the animal will sip without objections to the oil. According to age, one or two tablespoonfuls may be given every morning; and every evening a dose of from five to twenty grains of ammoniated copper, may be given to each pig according to age, up to two years. The copper may be given mixed with a spoonful each of flour and treacle, and smeared on the tongue. These remedies may be continued during a fortnight, and repeated afterward when needed.

RHEUMATISM.

The hog is also subject to this disease as well as humanity. It is preceded by several days of languor and indisposition to move, followed by heat of the body, pain, swelling of a joint or joints, with a change of location of swellings, being of a wandering character. There is a general stiffness and decrepid appearance. In the first place the bowels should be moved by giving two to three drachms of pulverized castor bean, to which may be added ten grains of opium

to relieve pain, and molasses enough added to make a mass, which can be smeared on the roots of the tongue. After this, give the following:—

Colchicum, one scruple;
Bicarbonate Soda, one tablespoonful;
Molasses to make a mass.

Smear on the roots of the tongue night and morning, and give soft food, to which soda may be added with benefit, in teaspoonful doses.

BLACK TOOTH IN HOGS.

Black tooth, so called, in swine, is sometimes caused by mechanical injury to teeth, received by chewing the dry hard kernels of corn. The ailment consists in a state of decay of the tooth (caries). Such decayed teeth may be removed by the same instrument as a dentist would apply to one's own tooth under similar circumstances. The symptoms of toothache in swine are similar to those exhibited by mankind, viz: loss appetite, salivation or slobbering, hanging the head, mostly to the side which is affected, peevishness, loss of all fear of man, and hot, repulsive breath. When hogs are fed on strongly acidulated food for any length of time, their teeth may become discolored; but it is a question whether the teeth at the same time are materially injured. So long as no decay or diminution of their substance can be noticed, and while the appetite and chewing facilities of the animal do not appear diminished no interference will be necessary. It is customary with ignoramuses to examine the teeth of the animal, and if one is found darker colored than the rest, it is supposed to be the cause of the disease, and the tooth is hammered off even with the jaw, leaving the broken roots and lacerated nerves of the tooth to increase the animal's sufferings. If the animal recovers it is considered a sure case of black tooth.

LICE ON HOGS.

There are many remedies against lice; but whatever remedy is used should be applied more than once, which of course causes much trouble where there are large numbers of hogs infested. One reason

why repeated applications are necessary is, that the hogs are apt to pick up lice anew from the ground and rubbing places; another reason is, that though the remedies applied may kill the lice, they do not affect the nits; and as these remain intact, and hatch within a week or ten days, a new crop of lice appear on the swine from this source. Whatever remedy is used, it should be applied all over the body. We will mention two remedies, either of which is effective, and comparatively cheap. Take one part of benzine, six parts of soft soap and fifteen parts of rain water; mix thoroughly, and apply with a stiff brush. Or, take one gallon of kerosene to each five gallons of rain water; apply as the former remedy. Give the hog pens a thorough cleaning out. Remove all offal, bedding, old woodwork, place it in a heap and burn it. Treatment of any kind will be of no avail, if general cleanliness is not attended to. All parts wherewith the hogs have been in contact, the scantling and posts of the stys, or enclosures, as well as the troughs, the walls of the piggery, or sheds, etc., all should be scraped off or scrubbed with boiling hot water, and thereafter be given a good coating of whitewash. The floor of the pens should be sprinkled once a week or oftener with plenty of ashes. It will be necessary, in order to insure a successful eradication of the vermin, to repeat one of the remedies mentioned, once weekly, for three successive weeks at least. When once lice in numbers have infested hogs, nothing but persistent warfare and cleanliness will rid them of these vermin. The hog pens ought to be whitewashed once a month. Another very simple, yet effective, method of destroying lice on animals, is to smear them all over with oil or lard. In twenty-four hours afterward, they should be well washed with soft soap and warm water. The application may have to be repeated two or three times.

MANGE ON PIGS.

Mange on pigs is caused by a minute insect which burrows under the skin. There is no way of curing it, or of preventing its spread, except by killing the insects and their eggs—not only on the pigs themselves, but also on the sides of the pens, posts, or anything that

the diseased pig rubs against. To destroy them on the woodwork, nothing is probably so good as petroleum, and though we have not tried it, we have little doubt but that it would also cure the pigs, especially if applied before the disease had made much headway.

The disease usually manifests itself on the skin under the armpits and thighs, and inside the forelegs. At first, small red blotches or pimples appear, and these gradually spread as the insects multiply and burrow under the skin. It is well to give sulphur and other cooling medicine in the food, but the real aim must be to kill the insect by the prompt and continuous use of external remedies. The pigs should be washed with soap suds, and as soon as dry apply a thorough coating of the following:—

Whale Oil, one quart;
Carbolic Acid Crystals, half a drachm.

Rub up the crystals in a little oil till it is incorporated, then add the remainder of the oil. Wash off with suds the next day and apply again. In three days repeat the application, then wash off next day. The cheap crude carbolic acid is equally as good.

TO PREVENT SOWS FROM EATING THEIR YOUNG.

It is well known that sows not unfrequently attack and devour their own young; or, if prevented from this, will not let down their milk, so that the young pigs necessarily die for want of nourishment. When this state of things is not caused by a diseased state of the uterus, the sow can be brought to terms by pouring a mixture of ten to twenty grains of spirits of camphor with one to three of tincture of opium, into the ear. The sow will immediately lie down on the side of the ear to which the application was made, and remain quiet for several hours in this position without interfering with her pigs; and on recovery from the stupor will have lost her irritability in regard to them. The experiment has been tried in Germany hundreds of times, according to one of the agricultural journals, without any injurious effects. It is also said that the eating of pigs by the parent sow can be prevented by rubbing them all over with brandy, and making the same application about the nose of the sow herself.

One of the best preventives is by careful feeding for a few days beforehand, giving slops and cooling food, which is loosening to the bowels. Costiveness is often a fruitful cause, which produces a feverish frenzy. Mild laxatives, saline cathartics, may be added to the slops when this is the case.

OPERATIONS.

SPAYING SOWS.

The proper age should be from four to eight weeks; and the sow should be laid down and the operation performed through the side. The only tools required for small pigs are a clasp knife, needle and thread. For convenience the knife should be short, the blade about half an inch wide, and an inch and a half long, with the edge rounded back at the point like a budding knife.

The needle should be about one and three-fourth inches long with a flat, rounded point (for easy sewing), and an eye large enough to carry coarse cotton thread, which should be used double by bringing the two ends together and tying in a double knot. The assistant should lift the pig out of the pen by its hind legs and lay it down on its right side. The operator puts his right foot on its neck and his left under its hip, with his shin close up to its back. The assistant, with its upper hind foot in his right hand and the lower one in his left, holds the legs back, as near as may be, in a line with the body. The operator now grasps the flank with his left hand, his fingers underneath and his thumb upon the hip joint, shoves the hair off a spot midway between the hip joint and the edge of the flank, then strains the flank tight by pulling it from him, and with the knife grasped firmly in the right hand, the knuckles of the second and third fingers resting on the side of the pig to act as a pivot, the blade of the knife held between the thumb and forefinger, with the point projecting half an inch, he makes a sweeping cut to that depth about an inch long, then raising the wrist, the point of the knife is pressed down so as to prick the muscles, the blade is then turned

toward the wrist to be out of the way, the forefinger is inserted and pressed down through the slit in the muscle to the inside membrane that covers the fat; by pressing the fingers of the left hand up through the flank to keep it taut, a hole is easily made through it with the point of the finger, which is then in the cavity of the belly, the guts are pushed forward, and the upper ovary is easily found and brought out by the point of the fingers, aided by the pressure of the thumb on the outside. It is grasped with the left hand, the folds of the bag are worked out by alternately pressing down the lower lip of the cut; when the fork is reached, work up the lower part of the bag in the same way, until the other ovary is brought out. Cut off the bag at or near the fork. Insert the point of the finger into the cavity of the belly, pushing back any gut that may have obtruded into the opening, and while the finger is in that position the assistant lets go the upper or left leg, which, by returning to its natural position, closes the lower and middle openings as the finger is withdrawn. The lips of the cut are brought together by the thumb and forefinger of the left hand, a stitch is taken through both about one-third the length of the cut from the end, another the same distance from the other end; a knot is tied by passing the eye end of the needle through the cross stitch. Let the pig up, or if it is returned to the pen, for obvious reasons, it must be lifted only by its right hind leg. It takes longer to tell how it is done than to do it. The writer, when in practice, has often spayed small pigs in half a minute. Only the ovaries should be taken off sows four months old and upwards, and the bag carefully returned with the forefinger. In certain conditions an iron clamp and searing iron should be used. The clamp is made with two semi-circular blades about three inches long, less than one-eighth inch thick, put together like a pair of shares, but with the edges shutting against each other. Any form of searing iron with one edge rounded off will do.

CASTRATING RIDGLING HOGS.

In these hogs, the testicles or seeds are not in the scrotal sack behind, but are in the body of the animal, immediately behind the

kidneys. In this case, the boar should be cut in the side or flank, as for spaying a sow, but the incision should be made large enough to admit the whole hand, when the testicles can be found, easily pulled out and severed.

CASTRATING HOGS.

This is understood by every old farmer, yet there are some points many do not know. For instance, the best way to castrate a ruptured boar is to take out the testicle and its enveloping sheath; then tie the string of the testicle with small twine, inside the neck of the sheath, removing both testicle and sheath afterwards, cutting off behind the tie. Many have been troubled by animals getting fly-blown subsequent to castration. Such will be glad to hear of any effective preventive or remedy. Dilute carbolic acid with thirty times its weight of water, and apply well to the wounded part after the operation.

INVESTIGATION OF SWINE PLAGUE.

Congress having previously appropriated the sum of $10,000 for defraying the expenses of a commission to investigate and determine the causes producing, and, if possible, discover remedies for, some of the more contagious and destructive diseases incident to domesticated animals, early in August last the Commissioner of Agriculture appointed examiners in the States of New York, Indiana, Illinois, Iowa, Kansas, Missouri, and North Carolina, to conduct such examination.

In the preliminary report of the Commissioner of Agriculture on the subject of diseases of domesticated animals, a tabular statement gives the total value of farm animals lost in the United States during the year 1877, principally from infectious and contagious diseases, at $16,653,428. These losses were based upon as accurate returns as could be obtained in the absence of an absolute census, but as they included data from but eleven hundred and twenty-five counties (about one-half the whole number of counties in the United States), the above sum falls far below the aggregate losses for that year. About two-thirds of this sum was occasioned by the loss of swine by diseases presumed to be of an infectious and contagious character. Notwithstanding these maladies had their origin nearly a quarter of a century ago, and had rapidly spread from one State and one county to another, there was great diversity of opinion as to their contagious or non-contagious character. Many intelligent farmers and stock-growers insisted that they were not transmissible from one animal to another, while perhaps equally as large a number contended that the diseases were of a highly infectious and contagious nature. As this was regarded as one among the most important facts to be determined by the investigation, two of the examiners devoted most of their time to experiments looking to a solution of this problem.

As the number and value of the annual losses among swine were much heavier than among all other classes of domesticated animals combined, it was deemed best to devote the greater portion of the limited sum to an investigation of the fatal diseases affecting this class of farm animals.

The preliminary investigation instituted and conducted in the fall and winter of 1877–78, established the fact that diseases prevail among these animals much more extensively during the late summer and early fall months than at other seasons of the year, and for this reason the examiners selected to conduct the investigation were employed for periods ranging from one to three months. It was assumed, and the subsequent history of the disease proved the assumption to be well founded, that the reduced temperature of the late fall and early winter months would cause an abatement of the disease, and in a measure deprive the examiners of subjects with which to continue their experiments. While, therefore, the very severe weather of the past winter caused a great reduction in the number of animals affected, the disease was not eradicated, nor did its fatality seem to be lessened. The spread of the infection from one herd to another was greatly diminished; but, in infected herds, where the malady was still prevailing when cold weather set in, there appeared but little difference in the rapidity of the transmission of the disease, from one animal to another, in the same herd. Dr. H. J. Detmers, V. S., of Chicago, who conducted his investigations and made his experiments in one of the worst infected of the many large hog-growing districts in Illinois, writing under date of January 7, last, speaks as follows of the effects of severe frost on the spread of the disease:

"Since my last letter the weather has continued extremely cold. Where I now am, in Lee County, some five or six miles west of Dixon, the thermometer indicated at seven o'clock on the morning of Jan. 2, 28°, below zero. Swine plague during this cold weather does not seem to spread either so readily or so rapidly from one farm to another as a few months ago; but, as to its spreading from one animal to another in the same herd in which it previously existed, no difference can be observed. It seems to be just as fatal as in August, and its course, on the whole, is probably more acute, as severe affections of the lungs and of the heart are more frequent, a fact easily explained in the habits of swine crowding together and lying on top of each other in their sleeping places when the temperature is very low."

In most of the States in which investigations have been made,

the examiners have found the symptoms and *post-mortem* appearances of the disease the same, and hence agree as to the propriety of designating the affection under the head of a general disorder. Dr. Detmers has, therefore, given the disease the name of "swine-plague," and Dr. Law has named it "Hog-fever." While either designation would seem to be eminently proper, that of "Swine-plague," will no doubt be generally adopted.

As in almost all general disorders, a cerain variety of organs were found affected and diseased. Marked changes and extravasations in various parts of the body were observed, and inflammation of the lungs, and large intestines was usually present. The heart, the pleura, the eyes, the skin, and many other important organs, showed either slight or more serious affections, and in almost every case tested with the thermometer, the temperature was found to be above normal heat before any other symptom of the disease was in the least apparent. In every herd where the disease had prevailed to any considerable extent, no case was found where death had occurred from a local malady, but all the lesions and appearances unmistakably indicated the existence of the general disorder. In but few cases was death found to have resulted from the affection of any single organ, but on the contrary seemed to have been the result of the various organic changes observed.

Dr. Detmers says that the morbid process, although in all cases essentially the same, is not restricted to a single part or organ, or to a set of organs, but can have its seat almost anywhere—in the tissue of the lungs; in the pleura; in the heart; in the lymphatic system; in the peritoneum; in all mucous membranes, especially in those of the intestines; in the liver; in the spleen and even in the skin. Only the pulmonal tissue and lymphatic glands are invariably affected.

The most constant and unvarying symptom of the disease is observed in the increased temperature of the body. Indeed, one of the examiners regards it as highly probable that a high temperature may exist several weeks before other symptoms are manifested, and that the disease may in some cases even be confined to and run its course in the blood without a localization in any other organ or organs.

A few isolated cases are noted where this symptom was lacking, but it may have been present in a mild form before other symptoms were observed. The external symptoms of the disease, which were found to be almost identical in all the widely-separated localities in which examinations were made, were a dullness of the eyes, the lids of which are kept nearer closed than in health, with an accumulation of secretion in the corners. There is hanging of the head, with lopped ears, and an inclination to hide in the litter and to lie on the belly and keep quiet. As the disease advances, the animal manifests more or less thirst, some cough, and a pink blush or rose-colored spots, and papular eruption appears on the skin, particularly along the belly, inside of the thighs and fore legs, and about the ears. There is accelerated respiration and circulation, increased action of the flanks in breathing, tucked up abdomen, arched back, swelling of the vulva in the female as in heat; occasionally, also, of the sheath of the male, loss of appetite, and tenderness of the abdomen, sometimes persistent diarrhœa, but generally obstinate constipation. In some cases large abraded spots are observed at the projecting points of the body, caused by separation and loss of the epidermis. In such cases a slight blow or friction on the skin is sufficient to produce such abrasions. In many cases the eruption, blush, and spots are entirely absent; petechia are formed in only about one-third of the cases. In some cases there is considerable inflammation of and discharge from the eyes. Some animals emit a very offensive odor even before death. In large herds, where the disease prevails extensively, this offensive effluvia can be detected for a great distance to windward. In nearly all cases there is a weakness or partial paralysis of the posterior extremities, and occasionally this paralysis is so complete in the first stages of the disease as to prevent walking or standing.

As symptoms of special diagnostic value, which are scarcely ever absent in any case, the following are mentioned: Drooping of the ears and of the head; more or less coughing; dull look of the eyes; staring appearance of the coat of hair; partial or total want of appetite for food; vitiated appetite for excrements; rapid emaciation; great debility; weak and undecided, and frequently staggering, gait;

great indifference to surroundings; tendency to lie down in a dark corner, and to hide the nose and even the whole head in the bedding; the specific offensive smell, and the peculiar color of the excrements. This last symptom is always present, at least in an advanced stage of the disease, no matter whether constipation or diarrhœa is existing. Among other characteristic symptoms, which are not present in every animal, may be mentioned frequent sneezing; bleeding from the nose; swelling of the eyelids; accumulations of mucus in the inner canthi of the eyes; attempts to vomit, or real vomiting; accelerated and difficult breathing; thumping or spasmodic contraction of the abdominal muscles (flanks), and a peculiar, faint, and hoarse voice in the last stages of the disease.

The duration of the disease varies according to the violence and seat of the attack and the age and constitution of the patient. Where the attack is violent, and its principal seat is located in one of the vital organs—such as the heart—the disease frequently terminates fatally in a few days, and sometimes even within twenty-four hours; but when the attack is of a mild character, and the heart is not seriously affected, and the animal is naturally strong and vigorous, one or two weeks usually intervene before death ensues. If the termination is not fatal, convalesence requires an equal and not unfrequently a much longer time. A perfect recovery seldom occurs; in most cases some lasting disorder remains behind and more or less interferes with the growth and fattening of the animal. Those that do recover make but very poor returns for the food consumed; hence from a pecuniary standpoint it makes but little difference to the owner whether the animal recovers or not. The attack is always more violent and fatal when large numbers of animals are closely confined together in small and dirty inclosures or in illy ventilated and filthy pens.

The disease can have its seat in many different organs or parts of the body, and therefore produces a great variety of morbid changes. This accounts for its different aspect in different animals. In some cases the principal seat of the disease may be in the organs of respiration and circulation, and in others in the intestinal canal and organs of digestion. Death may therefore be the result of different causes

in different cases. In some cases it results from a cessation of the functions of the heart, the lungs, &c., and in others it is in consequence of the inability of entirely different organs to perform their allotted functions. This being the case, the *post-mortem* appearances would necessarily greatly vary, but in all animals similarly affected the lesions and morbid changes were found identical.

Perhaps the most important point to be determined by this investigation was the contagious or non-contagious character of the disease. In order to do this a series of experiments were instituted and conducted solely with this end in view, by Dr. Detmers, of Illinois. These experiments resulted in determining the fact that the disease is both infectious and contagious, and that it is not confined alone to swine, but that other animals may contract it in a mild form and retransmit it to swine in its most virulent and malignant character.

On the 6th day of September, Dr. Detmers fed a portion of the stomach, the cæcum, and the spleen of a pig that had died on that day to two healthy pigs. On the 19th of the same month they showed signs of illness, and the symptoms continued to grow in intensity until the 23d, when, finding that the animal must die in a few hours, one of them was killed by bleeding. The other pig was found dead in the pen on the morning of September 30. The symptoms and *post-mortem* appearances were those of swine-plague, as they revealed the same lesions as those observed in an examination of the pig from which the diseased products had been taken for the purpose of infection. On the 24th of September, the day following the death of the first pig, a healthy pig of mixed Poland-China and Berkshire was confined in the same pen with the sick pig that died on the 30th of that month. It showed no signs of sickness until the 2d day of October, when the first symptoms of the disease were observed. It continued to grow rapidly worse, and was found dead in its pen on the morning of the 11th, nine days after the first symptoms were observed.

Experiments were made with a large number of other animals to test the infectious and contagious character of the plague. These experiments included the confinement of healthy with sick animals, and the inoculation of healthy animals with the diseased products of

those suffering with the fever. In almost every case, as will be seen from his detailed report, Dr. Detmers was successful in transmitting the disease from sick to healthy animals.

The microscopic investigations of Dr. Detmers also revealed some important facts. His discovery of a new order of *bacteria* or *bacillus*, or minute germs, which he names *bacillus suis*, as it is common only to this disease of swine, and his failure to inoculate healthy animals with virus from which these germs had been removed by filtration and otherwise, would lead to the conclusion that these microphytes are the the true seeds of the hog fever.

Dr. Detmers invariably found these germs, in one form or another, in all fluids. So constantly were they observed in the blood, urine, mucus, fluid exudations, &c., and in the excrements and in all morbidly affected tissues of diseased animals, that he regards them as the true infectious principle. They would seem to undergo several changes, and to require a certain length of time for further propagation; therefore, if introduced into the animal organism, a period of incubation or colonization must elapse before the morbid symptoms make their appearance. These germs were generally found in immense numbers in the fluids, but more especially in the blood and in the exudations of the diseased animals. With the proper temperature and the presence of a sufficient amount of oxygen they soon develop and grow lengthwise by a kind of budding process. A globular germ, constantly observed under the microscope, budded and grew under a temperature of 70° F. twice the original length in exactly two hours, and changed gradually to rod-bacteria or *bacilli*. Under favorable circumstances these *bacilli* continue to grow in length until, when magnified 850 diameters, they appear from one to six inches long. A knee or angle is first formed where a separation is to take place, and then a complete separation is effected by a swinging motion of both ends. After the division, which requires, but a minute or two after this swinging motion commences, the ends thus separated move apart in different directions. These long bacteria seem pregnant with new germs; their external envelope disappears or is dissolved, and then the numerous bacillus germs become free, and in this way effect propagation. Some

of the *baccilli* or rod-bacteria move very rapidly, while others are apparently motionless. A certain degree of heat would seem to be necessary for their propagation, as, under the microscope, the motion increases and becomes more lively if the rays of the light, thrown upon the slide by the mirror, are sufficiently concentrated to increase the temperature of the object. Another change observed by Dr. Detmers, but the cause of which he was not able to determine, was observed in the fact that the globular bacteria or bacillus germs commence to bud or grow, when, very suddenly, their further development ceases, and partially developed *bacilli* and simple and budding germs congregate to colonies, agglutinate to each other, and form longer or smaller irregularly-shaped and apparently viscous clusters. These clusters are frequently found in the blood and in other fluids, and invariably in the exudations of the lungs; and in the lymphatic glands in pulmonal exudation and in blood serum this formation can be observed under the microscope if the object remains unchanged for an hour or two, In the ulcerous tumors on the intestinal mucous membrane but few of these clusters will be found, but the fully developed *bacilli* many of which appear very lively, are always exceedingly numerous. These tumors or morbid growths in the intestines seem to afford the most favorable conditions for the growth and development of the *bacilli* and their germs. The presence of such immense numbers of these microphytes and their germs in the excrements and other morbid products of swine, leads Dr. Detmers to regard them, beyond doubt, as the principal disseminators of the plague. Whether these viscous clusters are instrumental in bringing about the extensive embolism of the lungs and other tissues by merely closing the capillary vessels in a mechanical way, or whether the presence, growth, development, and propagation of the *bacilli* and their germs produce peculiar chemical changes in the composition of the blood, thereby disqualifying it from passing with facility through the capillaries, or which cause a clotting and retention of the capillary system, Dr. Detmers is not able positively to decide. He is of the opinion, however, that these viscous clusters of bacillus germs and partially developed *bacilli* cause sufficient obstruction of the capillaries to produce fatal embolism.

The vitality of the *bacilli* and bacillus-germs is not very great, except where preserved in a substance or fluid not easily subject to decomposition; for instance, in water which contains a slight admixture of organic substances. Where contained in such a fluid and preserved in a vial with a glass stopper, they will remain for at least five or six weeks in nearly the same condition, or develop very slowly, according to the amount of oxygen and degree of temperature maintained. In an open vessel the development is a more rapid one. If oxygen is excluded, or the amount available is exhausted, no further change takes place. In the water of streamlets, brooks, ditches, ponds, etc., their vitality is retained or preserved for some time. In fluids and substances subject to putrefaction, they lose their vitality and are destroyed in a comparatively brief period; at least they disappear as soon as those fluids and substances undergo decomposition. In the blood they disappear as soon as the blood-corpuscles commence to decompose or putrefy. They are also destroyed if brought in contact with, or acted upon by alcohol, carbolic acid, thymol, iodine, etc. The destruction of these germs by decomposition would seem to account for the harmless nature of thoroughly putrid products when consumed by healthy animals.

Dr. Law also discovered bacteria in the blood of pigs suffering with the disease, and in one case, on the second day before death, he found the blood swarming with them, all showing very active movements. The blood from another pig, which had been inoculated from this one, showed the same living, actively-moving germs in equal quantity. They were further found in the blood of a rabbit and of a sheep inoculated from the first-mentioned pig. In an abscess of a puppy, which had also been inoculated, the germs were abundant. In the examination of blood from healthy pigs, the microscope failed to reveal the presence of these organisms. Dr. Law states that in his experiments the greatest precautions were taken to avoid the introduction of extraneous germs. The caustic potash employed was first fused, then placed with reboiled distilled water in a stoppered bottle which had been heated to red heat. The glass slides and cover glasses were cleaned and burned, the skin of the animal cleaned and incised

with a knife that had just been heated in the flame of a lamp. The caustic solution and the distilled water for the immersion-lens were reboiled on each occasion before using, and finally the glass rods employed to lift the latter were superheated before being dipped in them. On different occasions, when the animal was being killed, the blood from the flowing vessels was received beneath the skin into a capillary tube which had just been purified by burning in the flame of a lamp. With these precautions Dr. Law thinks it might have been possible for one or two bacteria to get in from the atmosphere, but this would not account for the swarms found as soon as the blood was placed under the microscape.

The most scrupulous care was observed by Dr. Law in his experiments in inoculation. The isolated and non-infected locality where the experiments were conducted offered special advantages for a series of experiments of this character, as there were no large herds of diseased and exposed swine, and, consequently, no danger of accidental infection from other sources than the experimental pens. The number of animals subjected to experiment was limited by the necessity for the most perfect isolation of the healthy and diseased, for the employment of separate attendants for each, and for the disinfection of instruments used for scientific observations, and of the persons and clothes of those necessarily in attendance. The experimental pens were constructed on high ground in an open field, with nothing to impede the free circulation of air. They were large and roomy, with abundant ventilation from back and front, with perfectly close walls, floors, and roofs, and in cases where two or more existed in the same building, the intervening walls were constructed of a double thickness of matched boards) with building pasteboard between, so that no communication could possibly take place except through the open air of the fields. When deemed necessary, disinfectants were placed at the ventilating orifices. On showing the first signs of illness, infected pigs were at once turned over to the care of attendants delegated to take charge of these alone. The food, utensils, &c., for the healthy and diseased animals were kept most carefully apart. When passing from one to the other for scientific observations, the

healthy were first attended, and afterward the diseased, as far as possible in the order of severity. Disinfection was then resorted to, and no visit was paid to the healthy pigs until after a lapse of six or eight hours, with free exposure to the air in the interval. In the pens the most scrupulous cleanliness was maintained, and deodorizing agents used in sufficient quantities to keep them perfectly sweet.

The experiments of Dr. Law have shown the period of incubation to vary greatly, though in a majority of cases it terminated in from three to seven days after inoculation. One animal sickened and died on the first day, three on the third, two on the fourth, one on the fifth, two on the sixth, four on the seventh, and one each on the eighth and thirteenth days respectively. Referring to experiments of others for determining the period of incubation, Dr. Law says that Dr. Sutton, observing the result of contact alone in autumn, sets the period at from thirteen to fourteen days; his own observations in Scotland, in summer, indicated from seven to fourteen days; Professor Axe, in summer, in London, concluded on from five to eight days; Dr. Budd, in summer, from four to five days; and Professor Osler, in autumn, at from four to six days. Dr. Detmers gives the period of incubation from five to fifteen days, or an average of seven days. A comparison of these results would seem to indicate that both extremes have been reached.

In experimenting in this direction, Dr. Law first sought to ascertain the tenacity of life of the dried virus. Some years ago Professor Axe had successfully inoculated a pig with virus that had remained dried upon ivory points for twenty-six days. In order to carry this experiment still further, Dr. Law inoculated three pigs with virulent products that had been dried on quills for one day, one with virus dried on a quill for four days, one for five days, and one for six days. These quills had been sent from North Carolina and New Jersey, wrapped in a simple paper covering, and were in no way specially protected against the action of the air. Of the six inoculations, four took effect. In the two exceptional cases the quills had been treated with disinfectants before inoculation, so that the failure was anticipated.

Three pigs were inoculated with diseased intestine which had been dried for three and four days respectively. The intestine was dried in the free air and sun, and the process was necessarily slower than in the case of the quills, where the virus was in a very thin layer, hence there was more time allowed for septic changes. In all three cases the inoculation proved successful. This experiment would prove that the morbid products, even in comparatively thick layers, may dry spontaneously, and retain their vitality sufficiently to transmit the disease to the most distant States.

Another pig was inoculated with a portion of moist diseased intestine sent from Illinois in a closely-corked bottle. The material had been three days from the pig, and smelt slightly putrid. The disease developed on the sixth day. A second pig was inoculated with blood from a diseased pig that had been kept for eleven days at 100° F. in an isolated apparatus, the outlets of which were plugged with cotton wool. Illness supervened in twenty-four hours.

A solitary experiment of Dr. Klein's having appeared to support the idea that the blood was non-virulent, Dr. Law tested the matter by inoculating two pigs with the blood of one that had been sick for nine days. They sickened on the seventh and eighth days respectively, and from one of these the disease was still further propagated by inoculating with the blood three other animals. Notwithstanding the success of these three experiments, Dr. Law is still doubtful of the blood being virulent at all stages of the disease.

But one or two experiments were instituted by Dr. Law to test the question of infection through the air alone. A healthy pig placed in a pen between two infected ones, and with the ventilating orifices within a foot of each other, front and back, had an elevated temperature on the ninth, tenth, and eleventh days, with lameness in the right shoulder, evidently of a rheumatic character. On the twenty-fourth day the temperature rose two degrees, and remained 104° F. and upward for six days, when it slowly declined to the natural standard.

A healthy pig was placed in a pen from which a sick one had been removed thirteen days before. The pen had been simply swept out, but subjected to no other disinfection other than the free circulation

of air, and as the pig was placed in the pen on December 19, all moist objects had been frozen during the time the apartment had stood empty. The pig died on the fifteenth day, without having shown any rise of temperature, but with *post-mortem* lesions that showed the operation of the poison. Dr. Law refers to this case as an example of the rapidly fatal action of the disease, the poison having fallen with prostrating effect on vital organs—the lungs and brain—and cut life short before there was time for the full development of all the other lesions. It fully demonstrates the preservation of the poison in a covered building at a temperature below the freezing point.

Perhaps the most important experiments conducted by Dr. Law were those relating to the inoculation of other animals than swine with the virus and morbid products of pigs suffering with the plague, and the transmission of the disease from these animals back to healthy hogs. A merino wether, a tame rabbit, and a Newfoundland puppy were inoculated with blood and pleural fluid containing numerous actively moving bacteria, taken from the right ventricle and pleuræ of a pig that had died of the fever the same morning. Next day the temperature of all three was elevated. In the puppy it became normal on the third day, but on the eighth day a large abscess formed in the seat of inoculation and burst. The rabbit had elevated temperature for eight days, lost appetite, became weak and purged, and its blood contained myriads of the characteristic bacteria. The wether had his temperature raised for an equal length of time, and had bacteria in his blood, though not so abundantly as in that of the rabbit. The sheep and rabbit had each been unsuccessfully inoculated on two former occasions with the blood of sick pigs, in which no moving bacteria had been detected. Subsequently, after two inoculations with questionable results, made with the blood of sick pigs in which no microzymes had been observed, Dr. Law succeeded in inoculating a rabbit with the pleural effusion of a pig that had died the night before, and in which were numerous actively moving bacteria. Next day the rabbit was very feverish and quite ill, and continued so for twenty-two days, when it was killed and showed lesions in many respects resembling those of the sick pigs. The blood of the rabbit contained active

microzymes like those of the pig. On the fourth day of sickness the blood of the rabbit containing bacteria was inoculated on a healthy pig, but for fifteen days the pig showed no signs of illness. It was then reinoculated, but this time with the discharge from an open sore which had formed over an engorgement in the groin of the rabbit. Illness set in on the third day thereafter and continued for ten days, when the pig was destroyed and found to present the lesions of the disease in a moderate degree. A second pig, inoculated with frozen matter which had been taken from the open sore on the rabbit's groin, sickened on the thirteenth day thereafter, and remained ill for six days, when an imminent death was anticipated by destroying the animal. During life and after death it presented the phenomena of the plague in a very violent form.

The results of these experiments have convinced Dr. Law, as they must convince others, that the rabbit is itself a victim of this disease, and that the poison can be reproduced and multiplied in the body of this rodent and conveyed back with undiminished virulence to the pig. Dr. Klein had previously demonstrated the susceptibility of mice and guinea pigs to the disease. The rabbit, and still more the mouse, is a frequent visitor of hog pens and yards. The latter eats from the same feeding troughs with the pig, hides under the same litter, and runs constant risk of infection. Once infected they may carry the disease to long distances. During the progress of severe attacks of the disease, their weakness and inability to escape will make them an easy prey to the omnivorous hog; and thus sick and dead alike will be devoured by the doomed swine.

Dr. Law says that the infection of these rodents creates the strongest presumption that other genera of the same family may also contract the disease, and by virtue of an even closer relation to the pigs, may succeed in conveying the malady to distant herds. The rat is suggested as being almost ubiquitous in piggeries, and more likely than any other rodent to contract and transmit the disease to distant farms. In order to test its susceptibility to the poison, Dr. Law inoculated a rat with the virus from a sick pig, but unfortunately the subject died on the second day thereafter. The body showed slight suspicious les-

ions, such as congested lungs with considerable interlobular exudation, congested small intestines, dried-up contents of the large intestines, and sanguinous discoloration of the tail from the seat of inoculation to the tip. With the fresh congested small intestine of the rat he inoculated one pig, and with the frozen intestine one day later he inoculated a second. The first showed no rise of temperature, loss of appetite, or digestive disorder; but on the sixth day pink and violet eruptions, the size of a pin's head and upwards, appeared on the teats and belly; and on the tenth day there was a manifest enlargement of the inguinal glands. In the second pig inoculated, the symptoms were too obscure to be of any real value. Dr. Law will continue his experiments with this rodent.

In addition to the above, Dr. Law experimented on two sheep of different ages, an adult merino wether and a cross-breed lamb, and in both cases succeeded in transmitting the disease. With the mucus from the anus of the wether he inoculated a healthy pig, which showed a slight elevation of temperature for five days, but without any other marked symptoms of illness. Eleven days later it was reinoculated with scab from the ear of the lamb, and again three days later with anal mucus from the sheep. The day preceding the last inoculation it was noticed that the inguinal glands were much enlarged, and in six days thereafter the temperature was elevated and purple spots appeared on the belly. At the time that Dr. Law closed his report this fever had lasted but a few days, but he regards the symptoms, taken in connection with the violent rash and the enlarged lymphatic glands, as satisfactory evidence of the presence of the disease. It can, therefore, be affirmed of the sheep as of the rabbit, that not only is it subject to this disease, but that it can multiply the poison in its system and transmit it back to the pig.

Among the later experiments by Dr. Law was one inaugurated with the view of testing the vitality of frozen products of the disease. This point was briefly alluded to above, but its importance would seem to call for further attention. In two cases healthy pigs were inoculated with virulent products which had been frozen hard for one and two days respectively. In both instances the resulting disease was of a

very violent type, and would have proved fatal had it been left to run its course. The freezing had failed to impair the virulence of the product; on the contrary, it had only sealed it up to be opened and given free course on the recurrence of warm weather. Once frozen no change could take place until it was again thawed out, and if it was preserved for one night unchanged in its potency, it would be equally unaffected after the lapse of many months, provided its liquids had remained in the same crystalline condition throughout. It is in this way, no doubt, that the virus is often preserved through the winter in pens and yards, as well as in cars and other conveyances, to break out anew on returning spring. The importance of this discovery, as applied to preventive measures, cannot be over-estimated. Infected yards and other open and uncovered places may not be considered safe until after two months' vacation in summer, and not then if sufficient rain has not fallen during the interval to insure the soaking and putrid decomposition of all organic matter near the surface. This will be made more apparent by reference to an experiment which resulted in the successful inoculation of pigs with virus that had been kept for a month in dry wheat bran. In winter, on the other hand, the yard or other open and infected place may prove non-infecting for weeks and even months and yet retain the virus in readiness for a new and deadly course as soon as mild weather sets in. Safety under such circumstances is contingent on a disuse of the premises so long as the frost continues, and for at least one month or more thereafter. Even during the continuance of frost such places are dangerous, as the heat of the animal's body or of the rays of the sun at midday may suffice to set the virus free.

Several of the examiners treat at length of hygienic and sanitary measures, and the attention of the reader is directed to a detailed report of Dr. Detmers, which will be found below.

MEASURES OF PREVENTION.

As swine-plague is a contagious or infectious disease, which spreads everywhere by means of direct and indirect infection, and as a spontaneous development is problematic, or has not yet been proven,

the principal means of prevention must consist in preventing a dissemination of the contagious or infectious principle, and in an immediate, prompt, and thorough destruction of the same wherever it may be found. To prevent successfully a dissemination of the contagion and to secure a prompt destruction of the same, Congressional legislation will be necessary. State legislation, for reasons to be mentioned hereafter, will never be sufficiently effective. As it is, the contagion or the infectious principle is, and has been, disseminated through the whole country in a wholesale manner.

If any transportation of, or traffic in, diseased and dead swine is effectually prohibited by proper laws, a spreading of the swine-plague on a large scale will be impossible, and its ravages will remain limited to localities where the disease-germs have not been destroyed, and been preserved till the same find sufficient food again. In order to prevent such a local spreading, two remedies may be resorted to. The one is a radical one, and consists in destroying every sick hog or pig immediately wherever the disease makes its appearance, and in disinfecting the infected premises by such means as are the most effective and the most practicable. If this is done, and if healthy hogs are kept away from such a locality, say for one month after the diseased animals have been destroyed, and the sties, pens, &c., disinfected with chloride of lime or carbolic acid, and the yards plowed, &c., the disease will be stamped out. I know that this is a violent way of dealing with the plague, but in the end it may prove to be by far the cheapest. The other remedy is more of a palliative character, and may be substituted if swine-plague, as is now the case, is prevailing almost everywhere, or in cases in which the radical measures are considered as too severe and too sweeping. It consists in a perfect isolation of every diseased herd, not only during the actual existence of the plague but for some time, say one month, after the occurrence of the last case of sickness, and after the sties and pens have been thoroughly cleaned and disinfected with carbolic acid or other disinfectants of equal efficiency, and the yards, &c., plowed. Old straw-stack, &c., must be burned, or rapidly converted into manure. It is also very essential that diseased animals are not allowed any access to running

water, streamlets, or creeks accessible to other healthy swine. Those healthy hogs and pigs which are within the possible influence of the contagious or infectious principle, perhaps on the same farm or in the immediate neighborhood of a diseased herd, must be protected by special means. For these, I think, it will be best to make movable pens, say eight feet square, of common fence-boards (eleven fence-boards will make a pen); put two animals in each pen; place the latter, if possible, on high and dry ground, but by no means in an old hog-lot, on a manure-heap, or near a slough, and move each pen every noon to a new place, until after all danger has passed. If this is done the animals will not be compelled to eat their food soiled with excrements, and as dry earth is a good disinfectant, an infection, very likely, will not take place. Beside this, the troughs must always be cleaned before water or food is put in, and the water for drinking must be fresh and pure, or be drawn from a good well immediately before it is poured into the troughs. Water from ponds, or that which has been exposed in any way or manner to a contamination with the infectious principle, must not be used. If all this is complied with, and the disease notwithstanding should make its appearance and attack one or another of the animals thus kept, very likely it will remain confined to that one pen.

If the hogs or pigs cannot be treated in that way, it will be advisable to keep every one shut up in its pen, or in a bare yard, from sundown until the dew next morning has disappeared from the grass, and to allow neither sick hogs nor pigs, nor other animals, or even persons, who have been near or in contact with animals affected with swine-plague, to come near the animals intended to be protected. That good ventilation and general cleanliness constitute valuable auxiliary measures of prevention may not need any mentioning. The worst thing that possibly can be done, if swine-plague is prevailing in the neighborhood, is to shelter the hogs and pigs under or in an old straw stack or hay stack, because nothing is more apt to absorb the contagious or infectious principle, and to preserve it longer or more effectively than old straw, hay, or manure-heaps composed mostly of hay or straw. It is even probable that the contagion of swine-plague, like that of some

other contagious diseases, if absorbed by or clinging to old straw or hay, &c., will remain effective and a source of spreading the disease for months, and maybe for a year.

Therapeutically but little can be done to prevent an outbreak of swine-plague. Where it is sufficient to destroy the infectious principle outside of the animal organism, carbolic acid is effective, and, therefore, a good disinfectant; but where the contagious or infectious principle has already entered the animal organism its value is doubtful. Still, wherever there is cause to suspect that the food or the water for drinking may have become contaminated with the contagion of swine-plague, it will be advisable to give every morning and evening some carbolic acid, say about ten drops for each animal weighing from one hundred and twenty to one hundred and fifty pounds, in the water for drinking; and wherever there is reason to suspect that the infectious principle may be floating in the air, it will be advisable to treat every wound or scratch a hog or pig may happen to have immediately with diluted carbolic acid. During a time, or in a neighborhood where swine.plague is prevailing, care should be taken neither to ring nor to castrate any hog or pig, because every wound, no matter how small, is apt to become a port of entry for the infectious principle, and the very smallest amount of the latter is sufficient to produce the disease.

Still, all these minor measures and precautions will avail but little unless a dissemination of the infectious principle, or disease-germs, is made impossible. 1. Any transportation of dead, sick, or infected swine, and even of hogs or pigs that have been the least exposed to the contagion, or may possibly constitute the bearers of the same, must be effcetively prohibited. 2. Every one who loses a hog or pig by swine-plague must be compelled by law to bury the same immediately, or as soon as it is dead, at least four feet deep, or else to cremate the carcass at once, so that the contagious or infectious principle may be thoroughly destroyed, and not be carried by dogs, wolves, rats, crows, &c., to other places.

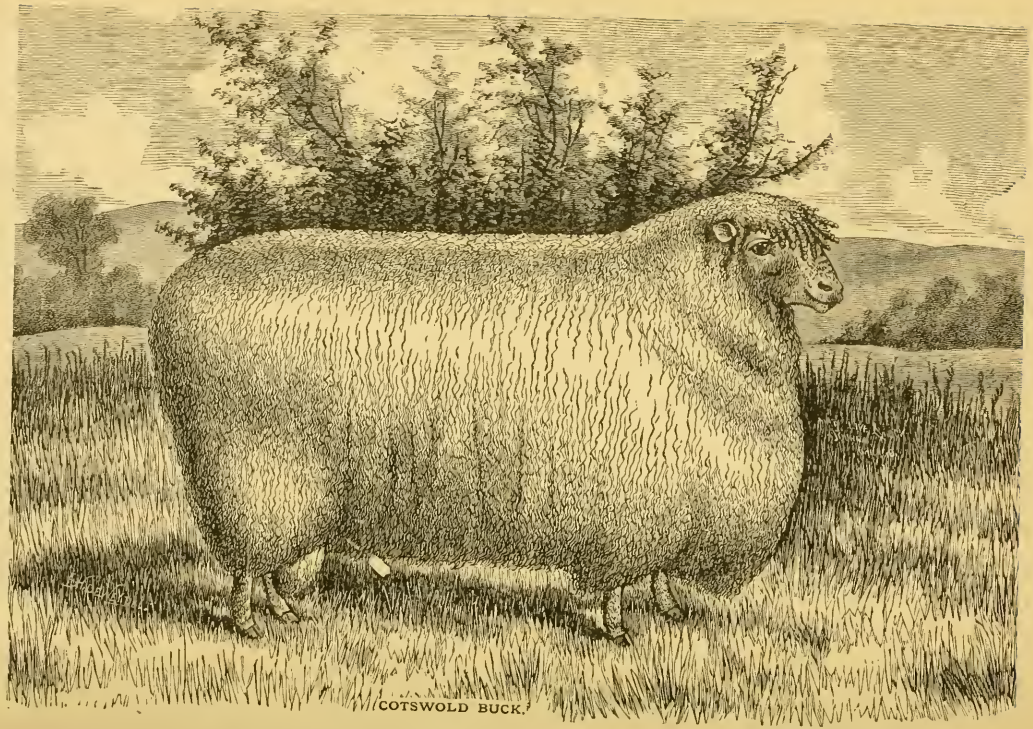
Another thing may yet be mentioned, which, if properly executed, will at least aid very materially in preventing the disease; that is, to

give all food either in clean troughs, or if corn in the ear is fed, to throw it on a wooden platform which can be swept clean before each feeding.

TREATMENT.

If the cause and the nature of the morbid process and the character and the importance of the morbid changes are taken into proper consideration, it cannot be expected that a therapeutic treatment will be of much avail in a fully developed case of swine-plague. "Specific" remedies, such as are advertised in column advertisements in certain newspapers, and warranted to be infallible, or to cure every case, can do no good whatever. They are a downright fraud, and serve only to draw the money out of the pockets of the despairing farmer, who is ready to catch at any straw. No cure has ever been found for glanders, anthrax, and cattle-plague, diseases that have been known for more than two thousand years, and that have been investigated again and again by the most learned veterinarians and the best practitioners of Europe, and yet there is to-day not even a prospect that a treatment will ever be discovered to which those diseases, once fully developed, will yield. Neither is there any prospect or probability that fully developed swine-plague will ever yield to treatment. It is true that the *bacilli suis* and their germs can be killed or destroyed if outside of the animal organism, or within reach on the surface of the animal's body. Almost any known disinfectant—carbolic acid, thymic acid, chloride of lime, creosote, and a great many others—will destroy them. But the *bacilli* and their germs are not on the surface of the body, except in such parts of the skin and accessible mucous membranes that may happen to have become affected by the morbid process. They are inside of the organism, and not only in every part and tissue morbidly affected, in every morbid product, and in every lymphatic gland. They are also in every drop of blood and in every particle of a drop of blood circulating in the whole organism. Who, I would like to ask, will have the audacity to assert that he is able to destroy those *bacilli* and their germs without disturbing the economy of the animal organism to such an extent as to cause the immediate death of the animal?

Still, I do not wish to say that a rational treatment can do no good; on the contrary, it may in many cases avert the worst and most fatal morbid changes, and may thereby aid nature considerably in effecting a recovery in all cases in which the disease presents itself in mild form, and in which very dangerous or irreparable morbid changes have not yet taken place. A good dietetical treatment, however, including a strict observation of sanitary principles, is of much more importance than the use of medicines. In the first place, the sick animals, if possible, should be kept one by one in separate pens. The latter, if movable—movable ones, perhaps six to eight feet square and without a floor, are preferable—ought to be moved once a day, at noon, or after the dew has disappeared from the grass; if the pens are not movable, they must be kept scrupulously clean, because a pig affected with swine-plague has a vitiated appetite, and eats its own excrements and those of others, and, as those excrements contain innumerable *bacilli* and their germs, will add thereby fuel to the flame; in other words, will increase the extent and the malignancy of the morbid process by introducing into the organism more and more of the infectious principle. The food given ought to be clean, of the very best quality and easy of digestion, and the water for drinking must be clean and fresh, be supplied three times a day in a clean trough, and be drawn each time, if possible, from a deep well. Water from ponds and water that has been standing in open vessels, and that may possibly have become contaminated with the infectious principle, should not be used. If the diseased animal has any wounds or lesions, they must be washed or dressed from one to three times a day with diluted carbolic acid or other equally effective disinfectants.



COTSWOLD BUCK.

THE

AMERICAN SHEEP BOOK

BEING A

MODERN TREATMENT OF THEIR DISEASES,

WITH A

HISTORY OF THE DIFFERENT BREEDS.

WRITTEN FROM A PRACTICAL STANDPOINT,

FOR THE USE OF

THE AMERICAN FARMER AND BREEDER.

LIVE STOCK PUBLISHING COMPANY.
CHICAGO, ILL.

CHAPTER I.

CHARACTERISTICS OF VARIOUS BREEDS.

CONTENTS OF CHAPTER.

DIFFERENT BREEDS.—The Leicesters—Cotswolds—Lincolns—South Downs—Hampshire Downs—Shropshire Downs—Oxfordshire Downs—Merinos of the Infantado and Paular families—French Merinos—Soil and climate favorable to each breed, etc.

DIFFERENT BREEDS.

SELECTING SHEEP FOR A FARM.

Where access to large and good city markets is rapid and cheap, and especially on high-priced and high-tilled farms, where sheep are kept in but limited numbers, as part of a system of convertible husbandry, improved mutton sheep are the most profitable. In interior situations, remote from such markets, the Merino or fine-woolled sheep yield the best returns.

SOILS AND CLIMATE.

Mutton sheep, to develop their characteristic qualities successfully, require soils ranging from medium to first-class, and consequently those yielding regular and good food. Some mutton breeds, like the South Downs, thrive best on dry uplands, producing abundant and nutritious but not rank vegetation. Others, like the Lincolns

and Leicesters, prefer moist, rich, alluvial valleys, where the grasses are abundant rather than delicate. With the Merinos dryness of soil is indispensable. There may be swamps or other wet lands on their range to which they have free access, but they cannot be confined to these without injury to their health. They will thrive on scantier feed than any other of the improved mutton breeds, and may be made to travel farther to obtain it. During the great scarcity of grass in Texas, in the remarkably severe winter of 1860, Mr. Kendall's large Merino flocks daily traveled four or five miles from their folds to fill themselves with the dried and frozen herbage; yet he lost scarcely one per cent. of their number, and they reached the spring in fair condition.

The mutton sheep are sufficiently hardy in temperate climates where they receive due winter protection. The Merinos are capable of enduring great extremes of temperature with comparative impunity.

The improved mutton breeds which have found most favor in the United States are of the long wool—the Leicesters, Cotswolds, and New Oxfordshires; of the short and middle wools, the South Downs, the Hampshire Downs, the Shropshire Downs, and the Oxfordshire Downs.

THE LEICESTERS.

The Leicester sheep, under the most favorable circumstances for their development, perhaps excel others in earliness of maturity, and none make better returns for the amount of food consumed by them. But they require better shelter, keep, and care, than any other variety. The ewes are not so prolific, nor so good nurses, as those of the other mutton families; and their lambs, when first dropped, demand a good deal of attention. The mutton is only medium in quality, and, owing to its great amount of outside fat, is not generally sought to supply American tables. In England, however, these sheep particularly meet the wants of a large class of producers and customers, and have been more extensively grown there than any of the large mutton varieties. The wethers are marketed in England at from twelve to fifteen months

old, and weigh from one hundred and twenty to one hundred and fifty pounds each. The fleeces are composed of a long combing wool, and average from six to seven pounds each. In small, selected breeding flocks in the United States, yearlings and wethers have yielded from ten to fifteen pounds of wool, and breeding ewes eight pounds.

THE COTSWOLDS.

The Cotswolds are a larger, hardier, and more prolific sheep than the preceding, and the ewes are better mothers. They furnish a valuable combing wool, and the average of fleeces in England is from seven to eight pounds. Selected flocks produce considerably more wool. The wethers, fattened at fourteen months old, in England, weigh from fifteen to twenty-four pounds per quarter, and at two years old from twenty to thirty pounds per quarter. They frequently are made to weigh considerably more in this country. Their mutton is superior to that of the Leicesters, the fat being less abundant, and better mixed with lean meat. They are much used in crossing other breeds and varieties. They impart more hardiness, with stronger constitutions and better qualities as breeders, to the Leicesters, and thicken them in the hind quarters. They give size, longer wool, and more wool, to some of the short-wooled families. They are decidedly favorite sheep with the breeders of long wools in the United States.

THE LINCOLNS.

The Lincoln is as large as the Cotswold, though in other respects, as now bred, very strongly resembling the Leicester. The head is long, the face narrow and bare of wool, with white, fine hair and light bluish tint, as in the Leicester. They stand rather higher on the leg than the two varieties before mentioned, and the carcass is apt to be less symmetrical; but the fleece is longer and heavier, and, though not quite so fine as the Leicester, is unsurpassed in lustre, and therefore commands the best prices in the markets. It is difficult to describe animals so as to enable a person to determine the pure bred from the mongrel; indeed, the best judges are not always able to detect the presence of a slight dash of inferior blood.

THE SOUTH DOWNS.

The South Downs are the oldest established short-wooled improved mutton variety. They are too well known to require particular description. In prime American flocks wethers twenty or twenty-one months old at Christmas, dress from seventy-five to one hundred pounds weight. At two years old they weigh from one hundred to one hundred and twenty pounds each. Their fleeces average from four to six pounds, according to the keeping and breeding of the flock. They are not as hardy as the unimproved South Downs, or as the cross between the South Downs and some other short-wooled varieties, but they still rank among hardy sheep; and they are good workers, being capable of traveling much further for their feed than any of the long wools. Their mutton sells in England for three and a half cents more per pound than Cotswold and Leicester, and half a cent more than the other improved short-wooled families and their varieties. They are prolific, and are excellent nurses.

THE HAMPSHIRE DOWNS.

This family is the result of a cross between the South Downs and a long-wooled English variety of greater size and better constitution. Some writers conjecture that they have also a slight infusion of Cotswold blood. They are coarser in appearance than the South Downs, and their mutton sells half a cent less per pound in the market; but they possess nearly all the good qualities of the former, and are hardier. They are favorites in many parts of England, but have not been introduced extensively into the United States.

THE SHROPSHIRE DOWNS, OR SHROPSHIRES.

These, like the preceding, have been produced by a South-Down cross in a very hardy short-wooled stock; and most of the flocks have also a dip of the Leicester and Cotswold blood. They are nearly as large as the last-named families; and they promise to unite to an uncommon degree the good qualities of the short and long-wools, being larger than the former and hardier and more easily kept than the latter; while their mutton is of good quality, and the ewes are highly prolific and are excellent mothers. Superior specimens of them are found in the United States and Canada.

THE OXFORDSHIRE DOWNS.

This comparatively modern family is of a cross between the Hampshire Downs or the South Downs and the Cotswolds, and the statement above made in respect to the Shropshires will apply equally well to them, though the two families vary in appearance and in several of their minor qualities. The Oxfordshire Downs have been tested on rough, rocky, briery pastures in Massachussetts, and have given great satisfaction, as hardy, easily kept mutton sheep.

MERINO SHEEP.

The original importation of Merino sheep into the United States from Spain included all the most prominent cabanas of that country. But, as a general thing, the different families, even when preserved pure from foreign admixtures, were crossed promiscously with each other. The Saxon, French, and Silesian Merinos were of later importation.

Of the the original Spanish stock, but two are now represented by distinct families—namely, the Infantado and the Paular.

THE IMPROVED INFANTADOS.

These sheep, originally imported by Colonel David Humphreys, of Connecticut, have been preserved pure to the present day. They are a fourth, if not a third, heavier than their Spanish ancestors, and are the largest family of American Merinos. Full-grown ewes, in their prime, weigh about one hundred pounds, and some of them one hundred and twenty and one hundred and thirty pounds. They are much rounder in the rib, broader, fuller in the quarters, shorter proportionably in the limbs, and stronger in the bone than were the Spanish sheep. They are indeed models of compactness and of beauty when judged by fine-wool standards. Their hardiness in respect to locomotion, or, in other words, their ability to travel, is not probably as great as it was sixty years ago; for, having no necessity to drive his sheep eight hundred miles a year, as did the Spaniards, the American breeder, in the place of the useless ability to travel, has developed those qualities which increase aptitude to take on flesh and

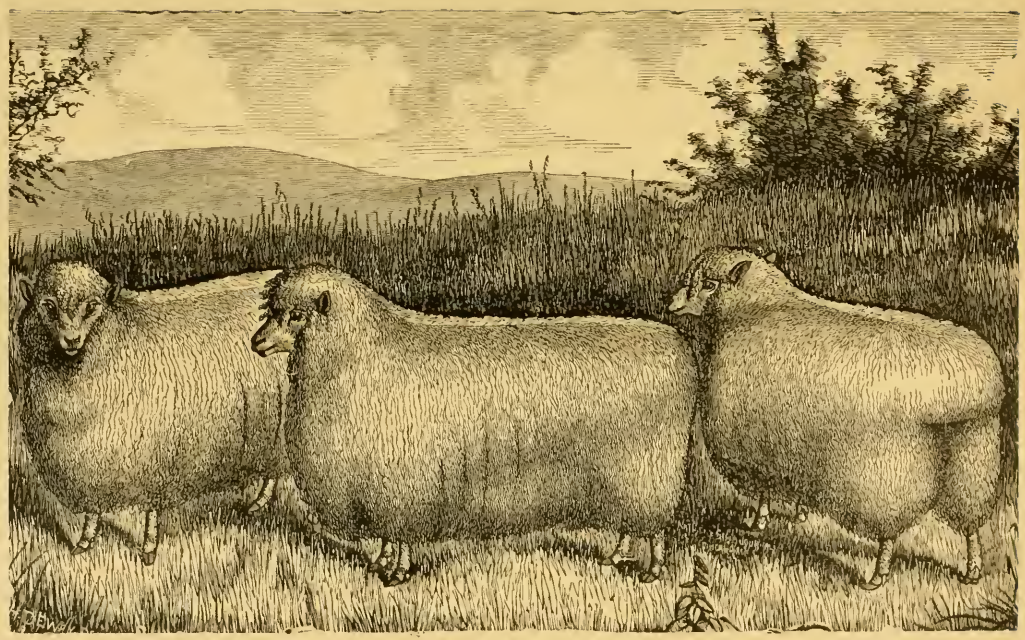
produce wool. The Improved American Infantados appear to be quite as hardy in other particulars as their ancestors — are more prolific, better nurses, and when properly fed, resist other vicissitudes equally well, and endure cold even better; but they probably demand better keeping. They will thrive, however, where none of the mutton breeds above described would find sufficient subsistence. Choice Infantado flocks with the usual number of sheep of different ages, yield from nine to ten pounds of wool per head. The fleece is longer, thicker, and covers the different parts of the animal far better than it did on the Spanish sheep. The quality is probably as good.

THE IMPROVED PAULARS.

The Improved American Paulars bear the same relation, in several particulars, to the breeding, that Devons do to the Short Horns among cattle, they are smaller, consume less feed, and perhaps can better endure deprivations of it. Accordingly they are the sheep for cold, meagre soils; for the scanty herbage of mountain districts, and for plains subject to periodical droughts. They have about the same general improved points of form as the Infantados, but are shorter bodied. As breeders and nurses they are equal. Their fleeces are of equal quality, but are a pound or two lighter to the head. For that reason, and on account of the greater size of the former, there is, at the present time, a prevailing inclination to cross the Paular flocks with Infantado rams. This produces an admirable result for the wants of many farmers; but it would be very unfortunate if the present mania for great fleeces should lead to the loss, in its essential family purity, of a class of sheep so well adapted to extensive regions of our country.

THE FRENCH MERINOS.

The Merinos imported into the United States from France were generally the largest that could be procured in that country, and they were from twenty-five to fifty per cent. larger than the present American Merinos. The best of them were well formed for animals grown so far beyond the natural dimensions of their breed, and they had a fair degree of compactness. They were also profusely wooled, but none carried as much wool for their weight as the choice Ameri-



can Merinos. Their wool was of good medium quality and quite even on the carcass. A much larger number of them than the preceding were gaunt, flat-ribbed, unthrifty animals, great consumers and hard keepers. Their fleeces were very uneven. Everything goes to show that these were mongrel sheep, grades between Merinos and some large, coarse-wooled variety. The best French Merinos, placed under a system of keeping resembling that of France, or treated as the careful growers of the improved mutton breeds treat their sheep, would undoubtedly be profitable in the United States; but such a system does not accord with the habits or traditions of American wool-growers, and the French Merinos, treated like our American Merino sheep, are wholly incapable of sustaining themselves. They lack ability to withstand either exposure to the weather or short keep. Accordingly, though but little more than thirty years have passed since their introduction among us, the full bloods are now nearly as much out of favor in the northern and eastern states as the condemned Saxons. A quarter of their blood, however, mixed with the American Merinos makes a large sheep, which is a favorite with many farmers. The cross between the French ewe and the American ram, after being continued for several generations, ought, with properly selected animals, to produce a striking result; and probably that result will yet be witnessed.

SILESIANS.

The sheep called Silesians in this country were produced in Silesia by breeding one hundred Spanish Infantado ewes to four Negretti rams, and their descendants together from 1811 down to the present day. They are evenly and beautifully wooled, and carry a good weight of it considering its superior quality. They are larger than any American family of Merinos, and they are also longer in the legs and longer and thinner in the neck, in proportion to size. They are, throughout, a less compact animal. Their hardness has not, so far as the writer is informed, been tested under the ordinary systems of management in our country. Their merits as competitors with the American Merinos will be better understood when such a test is made.

CHAPTER II.

MANAGEMENT OF SHEEP.

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SPRING MANAGEMENT OF SHEEP.

TURNING OUT TO GRASS.

Sheep confined on dry feed in the winter should be put upon grass in the spring gradually, that is, but for an hour or two a day at first, to prevent scouring or diarrhœa. To save wool and add to the health and comfort of sheep, they should be tagged before they are turned out to grass in the spring. This is performed by cutting away the wool around the vent and from the inside of the thighs. Sheep,

and especially ewes which have not lambed, should be handled carefully, and laid on their sides while the operation is performed. All dry burs which attach to wool should be exterminated from the pastures before the sheep are turned on them in the spring.

LAMBING.

Lambs should be allowed to come as early as the weather will permit with reasonable safety, for it is better to lose two in the spring than one the next winter. Ewes should have sheltered places to lamb in, which can be closed up and made warm in cold nights. Mechanical assistance ought not be given, in case of difficult parturition, until a considerable period has elapsed, and until the ewe begins to exhibit signs of failing strength. It should then be rendered with great caution and gentleness; and if the ewe continues her throes, the lamb should be pulled only during the throes. If the ewe becomes very weak before or after lambing, a gill of sound ale will be of benefit to her. If the womb is inverted, cleanse it, if dirty, with tepid water, then wash it with a solution of alum or a decoction of oak bark, and gently return it. If again protruded, return it in the the same way and take a single stitch with twine through the lips of the vagina, tying it loosely enough to permit the passage of urine. If this does not suffice, tie a waxed cord round the womb close to the breech, and let it slough off.

MANAGEMENT OF NEW-BORN LAMBS.

If a lamb can help itself, never interfere with it. If it is weak, hold it on its feet and let it suck. Rubbing it on the rump, loins, etc., with a finger is mistaken by it for the licking of its dam, and greatly encourages its efforts. For those cases where the dam has no immediate supply of milk, the sucking bottle should be in readiness, with an artificial India-rubber nipple on it; this article is now made and sold expressly for the purpose. The milk of a new milch cow is alone suitable, and should be given at its natural temperature. If a lamb is found soon after it is dropped, let it suck as much as it will, and four or five times again during the day and evening. If the lamb has been dropped some hours and is very hungry, it is not safe to allow it to fill itself at first.

CHILLED LAMBS.

If a lamb be found chilled by the cold, unable to move or swallow, it should at once be put in a bath of water about as hot as can be comfortably borne by the hand, or placed in a warm oven, or in the absence of the preceding, held over a pan of coals and turned and kneaded by the hands until it revives sufficiently to swallow. Then give it a feed of milk containing from half to a teaspoonful of gin or other spirits, according to the size of the lamb and the apparent necessity. If a lamb is becoming chilled, but is still able to swallow, the above stated dose will promptly restore it.

CONSTIPATION, DIARRHŒA, ETC.

An injection of warm milk, with a sufficient infusion of molasses to give it a chocolate color, is by far the safest and most effectual remedy for constipation in young lambs. Hold the lamb up by the hind feet, so that its fore ones just touch the floor, and then, with a small syringe, administer half a gill or a little more of the above-mentioned fluid. If dung is not soon discharged, repeat the operation. The diarrhœa of a sucking lamb rarely requires attention, but if it does, a spoonful of prepared chalk in a little warm milk, should be given at intervals of a few hours until it is checked. The first yellow excrement sometimes adheres about the vent so as to prevent subsequent discharges or render them very difficult. It should be removed and the parts rubbed with dry clay, chalk, or in the absence of anything better, dirt. If the lamb has difficulty in making water, a little pumpkin-seed tea removes the difficulty.

CUTTING TEETH, SWELLED NECK AND RHEUMATISM.

If the lamb appears to suck with difficulty or reluctance, its mouth should be examined, to see whether the front teeth are through the gums. If not, and the gums are inflamed and tender, they should be opened over the teeth with a sharp knife. When lambs are born with the glands of the neck enlarged, a strip of woolen cloth should be bound round the neck and wet a few times a day with a strong solution of camphor. If this is not effective, wet the cloth

with tincture of iodine. Lambs sometimes are born with stiff necks, or their necks become stiff subsequently. Some, particularly about the period of being turned out to grass, become lame in their legs, hobble about, and, in some cases, are unable to stand. Put them in a warm, dry place, and give two or three spoonfuls of lard and one of turpentine, one or twice, as may be required, to each lamb; rubbing the affected parts with hartshorn or opodeldoc will assist in the cure.

TREATMENT OF EWES AFTER LAMBING.

A ewe should not be required to move about much for a few hours after lambing. If her teats are closed against the efforts of the lamb, squeeze them out with the wetted fingers. If they have been cut off in shearing, and are grown up, reopen them with a needle, followed by a hot knitting needle, inserting neither further than is necessary. The sucking of the lamb will generally keep them open; but if they become inflamed, the ewe must be held for the lamb to suck, and some cooling lotion applied to the part.

GARGET.

If the udder is hard and hot, it should be fomented by frequently and continuously applying to it a cloth dipped in hot water. Repeated washings in cold water produce the same effect, but more slowly, and with a greater tendency to dry up the milk. If the lamb is dead, and there are indurated tumors in the udder, apply iodine ointment.

DISOWNING LAMBS, ETC.

A ewe which disowns her lamb, or one which is required to adopt a foster lamb, should be confined alone with it in a dark place, and, if possible, out of hearing of other sheep, and she should be held several times a day for it to suck. Frightening a ewe when with her lamb, by showing her a strange dog, or a child wearing a bright colored mantle, sometimes arouses her dormant maternal instincts. If a ewe's dead lamb is skinned, and the skin tied on a living lamb, she will generally readily adopt it. If she hesitates, rubbing gin on her nose, and sprinkling it on the lamb, will facilitate the process.

DOCKING LAMBS.

This operation should be performed when the lambs are about ten days old. Let an attendant take the lamb, holding its feet firmly in his hands, and press its hind-quarters snugly up to a smooth block, on the top of which the tail of the lamb should be drawn out straight. The operator should be provided with a broad chisel, made quite dull, and only sharp enough to sever the bone without crushing it. The edge of the chisel should be placed firmly upon the tail, about one inch and a half from the body, and the loose skin crowded up towards the body till the point for amputation is reached. Then, with the chisel held inclining outward at an angle of forty-five degrees from the body of the lamb, a single blow with the mallet completes the operation. The bleeding arteries should be immediately seared by a hot iron, which can easily be made ready by a small portable furnace. By this method the usual loss of blood will be prevented, and the consequent check to the growth of the lamb obviated. If lambs are docked when a month or six weeks old, or indeed at any age, and allowed to bleed until the flow stops of its own accord, it will not unfrequently require two weeks for the lamb to make up for this vital drain upon his young and tender organization. Cases of bleeding to death, or so that death occurs as a consequence in a few days, are by no means uncommon.

By this method of amputation two other advantages will be gained—the skin will always readily cover the end of the bone, and the tail will be left in a desirable shape.

CASTRATING LAMBS.

Formerly our method was to remove with a sharp knife a part of the lower end of the scrotum, then press the testicles upward and make an incision in the inner skin, and thus remove them. But this method was attended with much trouble and difficulty, besides evidently injuring the lambs. But we have adopted a different and a better way, which is, after removing the end of the scrotum, to seize the testicles with a pair of pincers and remove by a quick vigorous jerk. Never mind the second skin. We have practiced this method

for some time, and never lost a lamb. It is done quicker, and the lambs do not appear to mind it as much as they do the other way.

SUMMER MANAGEMENT.

TIME AND MODE OF WASHING.

It is generally held by those who have tried it, that early shearing is preferable for sheep, if they can be subsequently housed in case of severe storms or unusually cold nights. As early washing is improper in cold climates, it is urged that sheep should be shorn unwashed. This is a question on which the wool-grower should be allowed to exercise his own judgment; nor should any buyer attempt to compel washing, or to take advantage of its omission by insisting on a particular and fixed rate of shrinkage on unwashed wools. The shrinkage on every lot should be proportioned to its actual condition, as deduction is made on wheat, other products, or foreign wools which contain impurities. The mode of washing sheep does not require to be here described.

CUTTING HOOFS.

Merino sheep generally require to have their feet trimmed at least once a year. Some do this at washing, when the feet are clean and soaked soft; others immediately after shearing.

SHEARING.

Shearing should take place when the oily-feeling matter, termed yolk, has so far reappeared in the wool as to give it its natural brilliant appearance and silky feeling. The mode of shearing cannot be described here in detail. The wool should be cut off evenly and smoothly, reasonably close, but not leaving the skin naked, and which renders the sheep very liable to receive injury from cold. "Stubble shearing" and "trimming," *i. e.*, leaving the wool long, so as to give the next fleece the appearance of extraordinary length, or leaving it long in places, in order to affect the apparent shape of the animal, are both frauds.

DOING UP WOOL.

The fleece should be as little broken as possible in shearing. It should be gathered up carefully, placed on a smooth table, with the inside ends down, put into the exact shape in which it came from the sheep, and pressed close together. If there are dung-balls they should be removed. Fold in each side one-quarter, next the neck and breech one-quarter, and the fleece will then be in an oblong square form, some twenty inches wide, and twenty-five or thirty inches long. Then fold it once more lengthwise, and it is ready to be rolled up and tied, or placed in the press. The improved wool-press, worked by a lever, or by a crank, etc., does the work far more expeditously, far better, and with much less labor than doing it up by hand. Three bands of moderate sized twine (flax or hemp) once around are enough for the fleece. It is fradulent to put the unwashed wool of sheep that have died with disease, or those which have been killed, or unwashed tags, into washed fleeces. It is also fraudulent to sell burred wool so done up as to conceal the burs, without giving notice to the buyer. The burred wool should be put by itself, so that the buyer can open and examine it.

CATCHING SHEEP.

Clumsy catching and handling is always injurious to sheep, and hard on the party doing the work. The injury resulting from handling is greater on ewes heavy with lamb, which are about the only class that need to be caught until after tagging and shearing time. It hurts a sheep to be caught or lifted by the wool, and such a thing should never be done where it can be avoided. A portion of the flock to be caught should be driven into a pen until it is pretty well filled, though not crowded. The party doing the catching must go quietly, frightening the sheep as little as possible, and when near enough to the animal he desires to catch, should grasp its hind leg just above the hock, when if a pretty firm grip is held, very little kicking can ensue. Then he should pass the other hand in front of the breast, which gives him an advantage over the animal.

STORMS AFTER SHEARING.

Cold storms sometimes come after the proper time of shearing, and prove highly injurious, or even directly destructive to the lives of the sheep, unless they are put in barns or under sheds. A dense forest, especially on the lee side of a hill, is vastly better than no shelter under the circumstances.

TICKS.

A fortnight after the sheep are sheared, the lambs should be dipped in a decoction of tobacco strong enough to kill ticks and their eggs in the wool. This is best performed in a box or kettle, with a grated shelf on one side, to conduct back the fluid as the lamb is laid on it and its wool squeezed, or two tubs may be used, dipping the lamb in one, and standing it up and squeezing its wool in the other. In tobacco-growing regions the refuse stems may be used for this purpose; elsewhere the farmer should grow a few tobacco plants in his garden. The dipping of the lambs annually will keep ticks out of a flock. Left in it, they are highly destructive to condition, health, and even life.

ATTENTION TO HORNS, ETC.

It is necessary, at shearing, to cut off the wool clean between the horns, and from the head of rams, otherwise the least fracture of the skin on the head would lead to the parts becoming fly-blown, and to the generation of maggots. For the same reason horns which press on the head should be sawed off, or sections taken from them, which will prevent such pressure. And as rams do not recognize each other immediately after shearing, and are prone to fight, it is a good practice at shearing, to smear them at the base of and behind the horns with tar and turpentine, or fish oil.

MAGGOTS.

When maggots are produced in any wound or sore on sheep they can be killed by the application of turpentine, and tar should then be smeared over the part. If the ulcer is old and ill-conditioned, a solution of corrosive sublimate (two ounces dissolved in a quart of alcohol) will even more effectually destroy maggots and repel flies, and at the same time act as a good stimulant and caustic.

SALT.

Sheep should have access to salt, placed under cover, all the time, or they should be regularly fed as much as they will eat, once a week.

WATER AND SHADE.

Water is not absolutely indispensable in the summer pastures of sheep, but they thrive better with it, especially ewes and their unweaned lambs. The same is true of shade.

FALL MANAGEMENT.

WEANING AND FALL-FEEDING LAMBS.

Lambs should be weaned at four months old, and should have a nice, sweet, fresh piece of feed in readiness for them on being separated from their dams; and they should have prime pasturage until the setting in of winter. If it fails, they should be fed some green substitute for it, or receive an allowance of grain. Those breeding mutton sheep often feed cabbage or roots, or fold their lambs on rape. Lambs of any kind should be kept growing from the day of their birth until they reach maturity. This is the great secret of raising sheep profitably. As soon as the cold, heavy, autumn rains begin to fall, lambs should be housed nights, and as winter approaches they should be sheltered from cold storms in the day time.

FALL-FEEDING BREEDING EWES.

The ewes, on weaning their lambs, should be put on dry, short pasturage, until their milk dries off, and then on feed which will rapidly restore their flesh. They do not, as much as lambs, demand shelter and extra feed before winter, but there is no doubt that they amply pay for it in condition, especially ewes that are getting old and beginning to lose their strength. Strong, middle-aged sheep, however, demand no other extra feed than hay or cornstalks until winter sets in. "Sheep well summered are half wintered." To let them become thin before winter, renders it difficult and far more expensive

to winter them safely and well; they are not as likely to take the ram, and their product of wool is diminished. And if quite thin, there is an absolute peril to their lives if the winter is an unfavorable one, however well they may be taken care of. The danger is greatest to the quite young and the old sheep. These sometimes will not improve, but begin to run at the nose and eyes, gradually lose their appetite, grow weaker and weaker, in some cases exhibiting costiveness, and in others obstinate diarrhœa, and perish miserably. When they commence going in this way, medicine, feed, and care are almost thrown away upon them.

COUPLING, ETC.

Before rams are put with the ewes in the fall, the latter should be examined — directly and by the register — and divided into parcels, so that each parcel can be coupled with the ram most suitable to correct the defects of the dam in her offspring. Thus the shortest-wooled ewes would be selected out for the longest-wooled ram; flat-sided and long-legged ewes for a peculiarly round-bodied and short-legged ram, and so on. A ram running with the ewes ought not generally to be trusted to serve more than fifty. If taken out nights and extra fed, a very strong animal will serve a hundred. By keeping him separate from the ewes, and allowing him to serve them but once each, he will serve two hundred, and some uncommonly vigorous rams have served three hundred, and even more, in a coupling season of six weeks. The best feed for the ram, besides good hay or grass, is a mixture of, say, two parts oats, one part peas, with a slight sprinkling of wheat. He should be fed a few days before the coupling season, commencing with not more than half a pint, and increase gradually to a quart by the time his work commences. Some old rams, which have become used to hard work and high keep, will consume nearly double that quantity. The Merino ram is in his prime from three to seven or eight years of age. The ram lamb gets good stock if not overworked, but this premature use trenches on his subsequent vigor. The periods of heat in the ewe recur from the fourteenth to the seventeenth day. Her average period of gestation is about one hundred and fifty-two days.

DIVIDING FLOCKS FOR WINTER.

Sheep should be divided according to size and strength before they are put into winter quarters, so that the strong shall not take advantage of the weak at the rack, trough, etc. This is highly important. The smaller the number of sheep kept together in winter the better it is for them, and good farmers rarely allow more than one hundred to occupy the same stable and yard.

WINTER MANAGEMENT.

WINTER SHELTER.

There is no part of the United States, if there is of the world, where sheep are not better for some degree of winter shelter. In western Texas, and in the Gulf States, perhaps, they demand no more than a pole-shed or dense clump of trees to break the fury of the "northers;" north of latitude 40° to 42°, close barns or stables, with abundant ventilation, are beginning to be preferred by careful and systematic breeders. Open sheds are too much exposed to drifting snow, and they can not be shut up and made warm enough for early lambing. A room twenty by forty feet in the clear will properly accommodate seventy-five Paular sheep, and they can all eat at a time, without crowding, at wall-racks placed around it. The Infantados want a little more room; and the English breeds still more. Sheep barns should be placed in dry, elevated, but not windy situations. They are usually two stories high, the upper one being used for the storage of hay. The sheep stables underneath should be at least seven or eight feet high. A room large enough to hold one hundred and fifty Merinos may be partitioned across the middle by feeding racks, and seventy-five sheep kept on each side — their outside yards being also divided — but not more than one hundred and fifty ought to breathe the atmosphere of the same general apartment, however it may be divided on the floor. The rooms should be well

lighted, capable of abundant ventilation, and that ventilation constantly employed. Confined, impure air is highly injurious to sheep, and perfectly fatal if a dangerous epizootic makes its appearance in the flock. The slatted box-rack is now generally preferred in sheep barns and yards. The stables should be kept well littered down, and should be thoroughly cleaned out at least three times during the winter, so that the sheep should not lie, especially during thaws, on fermenting beds of manure. It is well, at intermediate periods, to scatter gypsum over the manure before covering it with fresh straw, as this absorbs the escaping gases, and adds greatly to the value of the manure. Sheepyards should, if practicable, be on dry gravelly ground, and should have at least three times as much area as the stables. They should have high, tight fences on the sides most exposed to severe winter winds, and should be kept well littered down. Habitual exposure to mud and filth is highly injurious to sheep.

CONFINING SHEEP TO YARDS.

The close confinement of sheep to stables and small yards operates on them as it does on all other domestic animals: it renders them torpid in habit, and promotes the taking on of fat and flesh. This is well for fattening sheep, but not for breeding ewes. The want of exercise and the increase of condition promotes that tendency to plethora which is natural to pregnancy, and though the evil effects of this are not always visible in the offspring, yet there come seasons when other co-operating conditions render it highly destructive. The lambs are born small and weak, and those that live are of but little value. Breeding ewes should have exercise by having access, at proper times, to a field, or obtain it in some other way.

WATER AND SALT.

Water is indispensable to sheep fed on dry feed in the winter, and they should have constant access to it. Salt is also indispensable to vigorous health. It is improper to salt sheep-hay heavily when it is put in the mow or stack, or to brine all their hay for them at intervals, because in either case the instincts of the animal are not left to guide its consumption. Salt should be placed in boxes in the

sheep-house so that they can eat it at will. Sheep will drink more frequently and with far keener relish at a trough where the water is constantly running in and out, than at one into which the water is pumped.

The drainage pipe which carries off the waste water should be so adjusted as to allow the trough to fill within an inch of the top. The trough should then be covered with a closely-fitting cover, and through this, and quite near the edge to which the sheep come to drink, two or three oval-shaped holes should be cut, about two and a half inches in the short diameter and five in the long.

If the sheep are to come up to the side of the trough, have the holes cut cross-wise of the cover; if they are to come to the end, cut them lengthwise. A sheep will quickly learn to put its nose through these holes for the water, and then the wool about the face and heavy folds of the neck will be kept out of the water, and thereby the animal saved from a vast amount of discomfort arising from the wool about the neck becoming wet and frozen.

The more one studies the habits of the sheep, the more will the extreme fastidiousness of the animal be impressed upon his mind, and the careful flock-master will soon learn that when he regulates his care in accordance with this peculiarity he will be well compensated for all his painstaking.

Not only will sheep drink with better relish of running than of standing water, but a little observation will convince any one that they will visit very often a trough arranged as already described, where they are obliged to touch only their lips to the water, when they would hold back, till driven by sharp thirst, from a trough where they could only drink at the discomfort of having the wool about the neck wet and frozen for hours.

AMOUNT OF FOOD CONSUMED, AND VALUE OF DIFFERENT KINDS.

It is estimated that all sheep daily consume, in the average winter weather of the northern States, about one pound of hay, or its equivalent, for every thirty pounds of their own live weight. All that they will eat of meadow hay is about the amount of nutrition demanded by

the Merino sheep in good, plump store condition. If a portion of more concentrated food like grain, is given, its excess of nutrition may be safely counterbalanced by feeding a corresponding amount of food less nutritious than hay, as, for example, straw. Barley and oat straw, if cut and cured green, is highly relished by sheep. Wheat straw is less so, and they will eat but little besides the chaff and heads of it, if they can obtain other food. Rye straw, unless chopped fine and mixed with meal, is wholly unfitted for sheep feed. Pea-haulm, if cured green, is an admirable fodder, but dry and dead, as it is generally gathered, it is wholly valueless except for manure. The blades and tops of nicely cured cornstalks make prime sheep feed. Fine red-clover hay, cured bright and green, is better than the best meadow hay, and on a full winter allowance of it, sheep actually fatten; it is also highly favorable to the milk secretions in breeding ewes. The grains that are most used in our country for sheep feed are oats, corn and peas. Oats are given to store sheep and lambs; corn is given to fatten sheep, and with some it is a favorite for all other classes of sheep. Some excellent feeders, like Mr. Johnston, of Geneva, New York, employ buckwheat. Peas are fed in a few instances to breeding ewes, and they greatly promote the growth of wool and the secretion of milk, but they are too scarce and expensive for common use. The same is true of beans, though they are accounted among sheep-breeders as more heating, and therefore less suitable feed. Bran and shorts, mixed with a little grain, make a most excellent feed both for lambs and old sheep. Bran-slop is admirable for promoting the secretion of milk in breeding ewes. Breeding ewes thrive better, and are better prepared in their general physical condition to bring forth well-developed, strong lambs, if they habitually receive green food during the winter, and other sheep are healthier for it. Colic, or "stretches," often so serious a malady among flocks confined to dry feed, does not attack sheep that get green feed. In regions adapted to their culture, Swedes and some other varieties of the turnip are especially adapted to this object. There is a beet which was brought from Silesia by Mr. William Chamberlain, (not the variety sold in seed stores as the Silesian beet,) which some persons who have tried them prefer to turnips.

Either root is vastly cheaper than grain of any description for the feed of sheep. Carrots have been tried and do not give satisfaction, and potatoes are too expensive.

REGULARITY IN FEEDING.

One of the important points of successful sheep-farming consists in strict regularity in the time of feeding, and in proportioning the amount of fodder to the wants of the animal. With good attention to these particulars, sheep will do better on moderate keep than on the best food fed with irregularity.

CHAPTER III.

MISCELLANEOUS DISEASES OF SHEEP.

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GENERAL DISEASES.—Grub in the Head—Blind Staggers—Sturdy—Diarrhœa—Dysentery—Colic or Stretches—Catarrh—Abortion—Parturient Fever—Obstruction of the Gullet—Hoove—Poisons—Sore Face and Lips—Inflammation of the Eyes—Administering Medicines to Sheep.

CONTAGIOUS DISEASES.

SCAB OR ITCH.

The first sign of the existence of scab is rubbing against any projecting body within reach; as it extends, sheep bite themselves, kick with their hind feet at their sides and shoulders. If one is caught and the hand placed on the mouth, while infected parts are scratched, gratification is evinced by nibbling at the hand, and when the infection is severe or general, this nibbling movement is regarded as an infallible sign. Examination will disclose spots on the skin, white and hard, the center marked with yellow points of exudation, which adheres to the wool, matting the fibers together. The wool may be firm on these spots, and no scabs are seen at this stage. Then

the yellow moisture, evaporating, gives place to a yellow scab, which adheres firmly to the skin and wool. Raw places appear at points which the animal can reach with his teeth and hind feet. The disease is complicated in summer by the presence of the larvæ of the blow-fly, the maggots burrowing under the scab. The animal becomes nervous, excited to wildness, and cannot obtain properly either food or rest, thus losing flesh and becoming reduced to a skeleton, from constant irritation and lack of nutrition, only the strongest animals recovering if left without treatment.

Destruction of the parasite and its eggs is the only object of remedial treatment. Arsenic and mercury are often employed very effectually, but they are poisonous, and therefore injurious and dangerous to the sheep. These and other solutions are used both as washes and dips. Sudden changes of weather and locality, or a deficiency of food after such treatment, often induces serious or fatal results which cannot be guarded against. Whole flocks have thus been lost. Mercurial ointment, with olive oil and a little turpentine, is popular in England, nevertheless, and is regarded as improving the yield of wool. Experiment proves that the insect will live in arsenic and sulphur for some hours; potash is more fatal, and tobacco is more deadly still, killing in a few minutes. But carbolic acid is probably the most potent remedy used. When combined with one hundred times its bulk of water, it has killed the insect in two minutes; when used with fifty times its bulk of water, a degree of potency harmless as a dip, it kills in forty to ninety seconds. We describe the manufacture of the carbolic acid dip, which has never failed when properly used:

First. It is necessary that carbolic acid should be obtained of uniform strength, and experience has proved that the crystalline product is less efficacious in the destruction of parasites than the cheap impure acid, which can always be obtained of the manufacturers. The liquid on exposure to the atmosphere, becomes a dark tarry liquid. The pure carbolic acid was employed in many experiments, at first with only partial success, but even had it proved to be superior to the impure, the price would have been a serious objection.

The impure, however, is very much cheaper, and in every experiment was found to be more active as a remedial agent than the pure carbolic acid, while its fluid condition at all temperatures renders it more easy of manipulation.

To effect perfect combination between it and the water used for dilution care is essential, as imperfect mixtures are capable of doing injury, and may cause the death of some of the sheep, particularly of those which are first introduced into the bath. The reason of this is obvious. An incomplete mixture allows the separation of the acid, which floats on the surface of the fluid in the form of a brownish oily, or rather tarry, scum; the first few animals which are dipped become covered with the undiluted acid, which acts at once and energetically as a caustic, causing prostration and death, unless immediately, on observing the symptoms of distress, means are taken to wash off the agent with warm water and soap; this treatment is not, however, at all times successful.

Kerosene oil will keep down the scab till shearing time, if well rubbed in.

HOOF- OR FOOT-ROT.

In this country the name foot-rot, or hoof-rot, or hoof-ail, is applied to a specific disease, believed to be as distinctive in character as the scab or the small-pox. It is notoriously propagated by contagion, and as well on high, dry, firm lands as elsewhere. Once contracted, it is greatly aggravated by constant wetness under foot; but in upwards of thirty years' extensive observation and correspondence on the subject, we have never known an instance where its origin could be satisfactorily traced to any other cause but contagion. It maintains itself year after year, and for an indefinite period, alike on wet lands and dry lands, in all our northern States, and is never eradicated except with considerable labor, a degree of skill, and the application of proper remedies. And with all these it is difficult to extirpate it from a large flock.

Low, soft, marshy lands, or even herbage on other lands which has been rendered rank and kept wet by protracted rains, cause here,

as in England, a degree of inflammation and ulceration in the feet. Farmers term it "fouls." It possesses none of the self-maintaining power and virulence of foot-rot. It is not contagious. It soon disappears, in ordinary cases, without other treatment, on removing the sheep to dry, firm land, or short pasturage on such land. If neglected too long it leads to serious ulceration and a loss of condition, but it never becomes, or assumes the specific characteristics of, foot-rot. The worst case yields readily to treatment.

Hardened pellets of mud between the claws cause irritation, and occasionally a degree of ulceration, and so do stubs in the feet and various other accidental causes. But in all such cases the mere removal of the causes leads to a speedy cure. Undue wear of the hoofs during a long journey upon hard soil, causes soreness and lameness, but a few days' rest puts an end to the difficulty. In none of these instances are the ulcerations equal to their own maintenance for any considerable length of time after the direct physical exciting cause is removed. They are simple ulcers, non-contagious and easily controlled; and, as compared with foot-rot proper, which they never become, they are wholly insignificant in their practical effects.

This soreness commences in the cleft of the foot, and which gradually extends into it, and disorganizes all its structure. The application of almost any caustic will, in an early or mild stage of the disease, eradicate the ulcer, so far as it is brought into direct contact with the ulcer, and kept in contact with it until its curative qualities exercise their full effects. But the great difficulty is, that among one hundred sheep every ulcer cannot be, or is not, so carefully uncovered by the knife, or kept so free from filth, that its entire surface is cauterized. And if such a surface, of the smallest extent, is protected from the caustic by a covering of horn or filth, then the seeds of the future malady and contagion are left in a soil where they are sure to be productive. Or let us suppose that every particle of ulcerous surface in the foot is touched by a mild caustic, like blue vitriol, and then immediately plunged into wet grass, or into moist manure, or washed by blood spirting from the wounded parts, would there be any probability of a radical cure under any of these circumstances? Experience

answers none. The difficulty of eradicating hoof-rot from a large flock, under the rough surgery and haste of the farm, can then be fully understood.

Can hoof-rot be cured in flocks? That is, can it be cured by the exercise of that degree of skill which the average of farmers can and will employ, after having a fair share of experience in treating the disease? All the real skill required is in the preparation of the foot for the application of the remedy. This preparation consists in so paring away the hoof that every ulcerated part of the foot can be brought freely, and for a sufficient time, in contact with the remedy employed. There are some other conditions requisite to successful treatment, but these require no exhibition of skill. We now answer our question above by saying that we do not believe a majority of farmers, and such help as they employ, will ever exercise the requisite skill to prepare the foot for the successful application of remedies, if they are applied in the ordinary way. By the ordinary way, we mean by a swab or stick, or brush, or by squirting them through a goose quill in the cork of a bottle.

The preparation of the foot is frequently a nice operation. It requires a familiar knowledge of the appearance of the disease, close attention, careful cutting, and proper instruments to cut with. If ninety-nine sheep out of a hundred have their feet properly pared, and a single ulcer so far covered up that the remedy will not sufficiently reach it, remains in one of the feet of the hundredth sheep, the flock is not cured — that single ulcer will run its course, and will lead by degrees to the re-inoculation of the flock.

The writer of this has had hoof-rot at four different periods on his farm, and at least five thousand sheep affected by it, all of which were cured, and he has a right therefore to speak with some confidence.

For mild cases of the malady, blue vitriol is decidedly the best remedy; for severe cases, butter of antimony. The writer has twice cured a flock completely by one application of the former. In the first instance, each sheep had its feet thoroughly pared for the purpose of exposing every part of the flesh in the least affected by

the disease. The sheep was then placed in a tub of saturated solution of blue vitriol and hot water three or four inches deep, and held there by the neck by an assistant. A second one was prepared in the same way and placed beside the first one in the water. When the third was ready, the first was taken out, and so on. Each stood at least ten minutes in the solution, which was kept constantly hot by dipping out and replenishing from the boiling kettle. The sheep were then placed in a dry situation, and they proved to be completely cured. This was at the opening of winter. Many years afterward a flock of lambs were treated in the same way, except that as five could stand in the tub of hot solution together each remained in it from twenty to twenty-five minutes. This, too, was at the opening of winter, and again the cure was perfect. Probably the hot liquor would be more effective than cold even on the uncovered ulcers, and it certainly would penetrate better to the covered ones. These are the only instances which ever came to the knowledge of the writer of a diseased flock of sheep being cured by a single application of any remedy.

When the foot is extensively disorganized and a powerful caustic is required to remove the dead structure, butter or chloride of antimony should be used. As it combines readily with the fluids in the parts, it almost immediately loses its strength, and it therefore possesses the admirable property of acting almost purely superficially; consequently its action can be regulated by the wishes of the operator. This is not the case with the other strong caustics, like nitric, sulphuric, muriatic acids, etc. These burn deeply and sometimes injuriously into the flesh, and the sores they produce probably render the sheep more subject to subsequent contagion. That is to say, the virus of foot-rot, probably like vaccine matter, takes more speedy and certain effect when brought in contact with the bare and punctured flesh. A favorite remedy among farmers is compounded as follows: One pound of blue vitriol, half a pound of verdigris, one pint of linseed oil, one quart of tar — the vitriol and verdigris to be pulverized fine, and if convenient ground through a paint-mill with the oil before the tar is added. The oil and tar, if allowed to dry on the feet,

form a coating which aids to prevent the application from being washed away by moisture. Whatever application is made, the sheep should be kept out of water, manure, etc., until the treatment has had time to produce its full effect. This thorough paring of the foot, so as to effect a perfect denudation of the diseased surfaces, and an avoidance of wounding the foot, so that blood will not be discharged to wash off the caustic, are the conditions to be principally sought after by the operator. Toe nippers and strong knives may be required to remove the outer growth of the horny covering of the foot; but as the operator cuts down near the quick, he should use a light, thin, very sharp knife, so that he can cut away all the horn necessary without wounding and thereby causing a flow of blood from the fleshy sole. This is more important where blue vitriol is the remedy; butter of antimony will of itself speedily stanch the flow of blood.

Our original process was equally effectual, and required considerably less labor and expense. But it was, we think, specially favored by circumstances. In both cases it took place at the setting in of winter when the ground was frozen. In cold weather the ulcers of hoof-rot do not ordinarily discharge any matter to inoculate healthy feet; and, thus, when the remedy was applied, we may suppose there were no cases of the disease in the state of incubation, that is, where inoculation had taken place but was not yet followed by the actual disease. This was an advantage, unless we are to suppose the solution of vitriol would act as a preventive as well as a cure. The frozen ground also kept all mud and moisture from the feet when the sheep were out of their stables; and the dung produced on dry keep, and in well littered stables, neither moistened nor dirtied their feet.

For greater certainty of success — to make a margin for a less perfect preparation of the feet — we would advise at least two parings and immersions of the feet in all cases; and in the season of pasturage, when inoculation could be going on, and when it would be far more difficult to keep moisture and dirt from the feet, we would counsel the third repetition of the process throughout the entire flock. Blue vitriol has the great advantage, that when applied to a well foot it does not make the skin between the toes sore (and thus possibly

render inoculation more easy,) as do the strong acids with which many persons treat this disease. The second and third processes require comparatively little paring; and it is best, when one's hand is in, to "make a sure thing of it" at a little additional cost.

Whether it is best to use water or a decoction of tobacco in the hot vitriol bath, may depend upon circumstances. The water is sufficient. The vitriol effects the cure. But tobacco decoction is an admirable application to ulcerated surfaces on sheep. It is the deadly enemy of parasitic insects whether in sores or on the skin. We are inclined to think it produces healing effects. Therefore, if the stems or imperfect leaves can be procured cheaply enough, we would use it; otherwise we would use water.

In this, as in other processes of treating hoof-rot, we think the feet should not for some time be exposed to wet or dirt, to wash off, dilute, or absorb the application, or relax the tissues. We think it would be safer not to allow the sheep to run on grass wet with rain or dew, for several days; indeed, we should prefer, though it might not be absolutely necessary, to have their feet kept dry, except when in the bath, during the whole course of treatment.

We have often known flocks in skillful hands cured by applying remedies in the usual way, but every experienced sheep-farmer knows that in a great majority of cases they are not so cured. And many of the flocks said to be cured, are sure to develop the disease again when unfavorable conditions occur and continue for any considerable length of time. We believe the hot vitriol bath is by far the surest remedy; and when the paring is reasonably good, and the other conditions we have mentioned are properly observed, we consider it as sure a one as those which in this and other diseases are commonly termed "sure cures."

We would advise the mixture of no other ingredients with blue vitriol in the hot solution. They might be harmless, and possibly beneficial; but they are unnecessary, and we cannot always be certain that two things, which would be separately good, will not, when united, impair each other's effects. It is an excellent maxim to "let well enough alone."

GENERAL DISEASES.

GRUB IN THE HEAD.

The gad-fly of the sheep deposits its eggs in the nostrils of the sheep in the months of July and August, and these being immediately hatched by the warmth and moisture, the larvæ or young grubs crawl up into the cavities of the head, and attach themselves to the membraneous linings. They remain there until the ensuing spring, when they become thick, plump grubs, more than an inch long. They then descend from the head, drop on the ground, burrow into it, take the form of a chrysalis, and at the proper time again hatch forth gad-flies. Their effect on the sheep is a matter of considerable dispute, some eminent veterinary writers considering them entirely harmless. Others, and a much greater number, believe that the irritation they occasion produces disease and death. If the sheep begin to fall off in condition a little before spring, though previously in good flesh, and their feed kept fully up; if they wander round with movements indicative of pain in the head, and discharge mucus, tinged with blood, from the nose, though oppressed with no catarrhal difficulty, it may be suspected that they are suffering under the effects of grub in the head. Some persons have blown tobacco smoke up their nostrils from the tail of a pipe, the bowl being covered with a cloth, with asserted good effect. Others have injected tobacco water with a syringe, but this must be prevented from entering the throat in any considerable quantity. The best method is to prevent the fly depositing the eggs by smearing the nose around the nostrils during the above months with tar, to which some coal tar has been added. There has been some dispute whether the fly laid eggs or the already hatched maggot. We have been assured by several intelligent sheep-growers in the West, that all the female flies that they had examined contained not eggs, but living larvæ.

We think that these apparently contradictory statements may be easily reconciled. Many flesh-flies, or blow-flies, as they are commonly called, if they cannot find any suitable seat or carrion of any

kind to lay their eggs on, retain those eggs so long in their bodies that they actually hatch them out into living larvæ, as we have ourselves repeatedly remarked. Yet the normal habit of these same flies is to lay eggs. In the same way we conceive that the normal habit of the sheep bot-fly is to lay eggs, and that it is only when she cannot find any sheep at all to prey on, or when, by any means, she is prevented from reaching their nostrils, that the eggs hatch out prematurely inside her body, and are sometimes deposited afterwards in the form of living larvæ, or maggots, in the nostrils of any unfortunate sheep that she can come across.

BLIND STAGGERS — STURDY.

The disease called blind staggers, is the uncommon affection called sturdy, or turnsick, which disease is caused by the pressure in the brain of a cerebral hydatid, and which, in its developed state, consists of a bladder provided with a variable number of heads. The variety of ways in which this disease manifests itself, has caused it occasionally to be confounded with other diseases — with attacks of the sheep-bot, with functional disorders of the brain, or with blind staggers. The disease is caused by the sheep picking from the pasture the ova or larvæ of the tapeworms dropped from dogs, foxes, rabbits, etc. Sturdy rarely affects sheep above two years of age. It will be found to prevail on farms with open pastures, where dogs are employed to guard the flocks, or where sheep are confined within limited space, with one or more dogs amongst them. These are the conditions favorable to the development of sturdy, and they are those favorable to the dissemination of tapeworm eggs by dogs, and the penetration of eggs in the bodies of sheep. Sturdy generally terminates fatally, owing to the circumstance that the cause of the disease — the parasite — can not be destroyed or expelled by any remedy administered internally. The natural method of relief, which is by the absorption of the bones of the skull and evacuation of the hydatid, is very rare. Death invariably ensues when the parasite is encysted and developed in the center of the brain. Usually but one hydatid is found within the skull, and if that one should happen to be

located at the surface of the brain, the bones of the skull, through absorption, gradually become thinner as the hydatid develops, and on examining the head, a soft place may often be detected, which indicates that the fellow lies underneath. After a portion of the skin has been laid back, and the place carefully opened, the liquid from within the cyst may be extracted by a small syringe, a few drops of tincture of myrrh or tincture of aloes injected, and the opening covered by replacing the skin and sewing up the wound. If the bladder can be seized and drawn out, so much the better, and no injection is then necessary. The wound heals readily, and the animal may thus be saved—that is, if the case has been timely and properly attended to.

DIARRHŒA.

Common diarrhœa, or scours, not attended with constitutional disease, generally requires no remedies. If protracted, two or three days' confinement to dry food, or an ounce of prepared chalk given in half a pint of tepid milk, will usually put a stop to it. If the purging is severe, or accompanied by mucus slime, a gentle cathartic of an ounce of Epsom salts or oil should be administered to a sheep, and half as much to a lamb six months old, and this be followed up by the dose of chalk and milk above recommended, once a day for two or three days. But "sheep's cordial" is a better remedy than the chalk, and may be kept on hand by every farmer. It is composed of the following ingredients: Prepared chalk, one ounce; powdered catechu, half an ounce; powdered ginger, two drachms; and powdered opium, half a drachm. Mix them with half a pint of peppermint water, and give two or three tablespoonsful morning and night to a grown sheep, and half as much to a lamb.

DYSENTERY.

This differs from diarrhœa in various observable particulars. It is attended by fever; the appetite is irregular and generally poor; the evacuations are as thin as, or thinner than, in diarrhœa, but they are slimy, sticky, and very offensive in smell. As the disease progresses, they become tinged with blood, and the animal rapidly wastes away.

It sometimes dies in a few days, and sometimes lingers along for several weeks. This is treated much like severe diarrhœa, only many persons give two cathartics, instead of one, at the beginning. The English practitioners also bleed, if the malady is detected in its very first stage; but if debility has ensued, it prostrates the system too much. The "sheep's cordial" requires to be given longer, and after a short period tonics are added—more ginger and from one to two drachms of gentian daily. This last is an admirable tonic. In place of the above remedies, some American farmers give a teaspoonful of laudanum and a tablespoonful of gin or rum, mixed and put in a little diluted fluid.

COLIC OR STRETCHES.

This is occasioned by confinement to dry food. During the paroxysms the sheep stretches itself incessantly, and exhibits much pain. A cathartic of one ounce of Epsom salts or castor oil will usually effect a cure. A drachm of ginger and a teaspoonful of the essence of peppermint, put in warm water with the salts, adds to their efficacy. Half of the above dose for lambs. Green feed, even if given only once or twice a week, prevents this malady.

CATARRH.

This is common in winter among unsheltered sheep, or those that are wintered in small, close, unventilated stables. In its simple form it is not dangerous, unless its exciting causes are continued; but frequent colds, rendered chronic by mismanagement, impair the condition of sheep, and eventually lead to low forms of fever, wasting and death. An epizootic catarrh, like influenza in unusually changeable winters among human beings, occasionally rages with great violence over extensive regions, producing wide-spread destruction in our American flocks. The best course is to prevent the disease by proper management. Hardy sheep, in good condition, need not, with reasonable precaution, be exposed to taking cold, and if any number of them chance to do so, certainly the neglect causing it need not be repeated. For simple cold it is not common to do anything, though some careful farmers administer a tablespoonful of tar, and smear a

little of it on the nose. Non-exposure, and dry, well-ventilated stables in winter, generally lead to a speedy cure. If the malady becomes chronic, and assumes an epizootic and malignant form, no remedy has yet been discovered which will control it. Perhaps the best practice would be good careful nursing.

ABORTION.

Abortion is usually produced by a hurt or injury. It has never, in this country, assumed that infectious character that it sometimes does among cows; but it is well to remove the abortive lamb and the "cleanings" from the sheep-yard, and also to withdraw the ewe and place her in "the hospital." She requires care and extra nursing, or she will become very poor and lose a large portion of her fleece.

PARTURIENT FEVER.

This has as yet appeared only among our English sheep. The ewe, a few days before lambing, appears dull and stupid; her appetite fails; she exhibits giddiness, and a discharge of a dark color takes place from the vagina. She loiters behind her companions, staggers in her gait, her head droops, and her eyes are partly closed. If she now lambs, and is carefully sheltered and nursed, she sometimes recovers rapidly; but if no such relief is afforded, typhoid symptoms begin to occur. She wanders away alone, exhibits great uneasiness and pain, and strikes her body frequently with her hind feet. The prostration rapidly increases, and the dark colored discharge from the vagina continues and has an extremely offensive odor. A lamb or a pair of lambs are frequently expelled at this stage in a high state of putrefaction, and she is now unable to rise and is almost insensible. Death soon closes the scene.

The ewe attacked by this disease should at once be removed from the flock, and if a large English ewe, a dose of two ounces of Epsom salts, with two or three ounces of molasses and one drachm of nitre, mixed with a pint of warm linseed gruel, should be administered; and if this does not open the bowels in eight or ten hours, it should be repeated. The nitre and molasses are given subsequently, night and morning, in a quart bottle of gruel, until the fever abates, when

the nitre is discontinued. If the ewe lives to the third or fourth day, and the stench of the dark discharge from the vagina shows that the fœtus is dead, a small quantity of dry, pulverized belladonna is applied with the end of a finger to the mouth of the womb every hour until it is sufficiently relaxed to allow the removal of the fœtus. After this is effected, the womb is thoroughly syringed with warm milk and water, the ewe put in as easy a position as possible, and her posture changed two or three times every day. She is then carefully nursed until recovery. This treatment has proved very successful.

OBSTRUCTIONS OF THE GULLET.

Sheep sometimes get a piece of turnip or other substance lodged in the esophagus or gullet. If it cannot be moved by the fingers, set the sheep on its rump, holding its nose upward, pour some oil into the throat, and then insert a small, flexible probang, and very gently push the obstructing substance into the stomach. The probang, in the absence of a gutta-percha one, should be of strong, flexible wood, like elm, made smooth and round, and five-sixteenths of an inch, or a little larger, in diameter. A small bag of flax-seed should be firmly secured to, and cover, the lower end; and on dipping the rod in hot water, to limber it for use, the bag will become soft and slippery, so as to protect the esophagus from laceration. If no flax-seed is at hand, carefully wind the lower end of the probang with tow and dip it in oil.

HOOVE.

If sheep become swollen from being turned on fresh clover, or the like, they should be driven gently about for an hour. If swollen to a dangerous degree, and the distress and oppression are rapidly increasing, a trochar, or, in its absence, a pocket-knife, must be plunged into the left flank, half way between the haunch and ribs, and well up towards the back-bone, so that the pent-up gas will escape through the orifice. An ounce or two of Epsom salts are generally administered after an attack of hoove. If the gas continues to form in the stomach, give a drachm of chloride of lime dissolved in a gill of water.

POISONS.

The narrow-leafed or low laurel, and the broad-leafed laurel or "calico bush" or "spoonwood," are eaten by sheep, particularly when they are unaccustomed to them, or when they are hungry from traveling, and find these bushes growing by the roadsides. A strong decoction, made by boiling the bruised twigs of white ash for an hour, administered in doses of half a gill or a gill, and repeated after an interval if necessary, is believed to be an effectual antidote by persons who have tried it. Drenches of milk and castor oil are also said to have been successfully resorted to. Injecting warm water into the stomach and pumping it out again, and continuing this until vomiting is produced or the poison thoroughly diluted, using a common India-rubber stomach-pump, *i. e.*, a hollow ball with a perforated tube attached, would be highly useful in all cases of poisoning by whatever produced. This should be followed up by active aperient medicine. Other plants besides laurel are suspected of poisoning sheep.

SORE FACE AND LIPS.

Sheep's faces occasionally become quite sore when they are at pasture in summer. It is attributed to the effect of St. John's wort, and to some others. It can be easily cured by the application of sulphur ointment, consisting of sulphur and lard. Swelled and sore lips more frequently appear about the opening of winter, and the causes are unknown. Sulphur ointment, mixed with a little tar, is a very efficacious remedy.

OPHTHALMIA.

This disease is characterized by redness of eyes, intolerance of light, and constant flow of tears. Bathe the eyes occasionally with warm water, to which a little sulphate of zinc has been added—a drachm to a quart of water. A teaspoonful of laudanum may also be added with much benefit.

MODE OF ADMINISTERING MEDICINES TO SHEEP.

Sheep medicines administered internally should be in a fluid form, for otherwise they fall into the rumen or paunch, where they do not produce so much effect. Even fluids should be poured into the throat

with care and deliberation, or they are likely to take the same course. It is common, as in the case of the horse, to give sheep medicine through a horn. Some persons fasten their mouths open by means of a bit of three-quarter-inch board, about two and a half inches wide by four inches long, with an inch and a half hole through its center, and a strap attached to each end. This piece of wood is placed in the mouth so as to hold it fully distended, and is confined there by tying the straps over the back of the head. By holding up the head of the sheep and inserting a horn or tube through the hole in the wood, fluid can be poured down the throat without difficulty. A probang can more conveniently be inserted through the same aperture in case of choking.

POULTRY DISEASES.

While many valuable fowls are lost every year from carelessness; there are also a great many that die from the owners not being able to give them proper treatment when sick. A chicken in a great many cases is looked upon as such a small thing that it does not seem worth while to give it any care or attention when sick, and so they are left to mope around among the other fowls, and in many cases the disease is contagious and is the means of losing the whole flock, while if the one that was first taken sick had received some little attention at first, it, as well as the others, might have been saved.

BUMBLE FOOT

Is the name given to a fowl's foot when it has a cone or lump on the bottom of it. The Asiatic fowls are more apt to be troubled with this disease than the lighter weight fowls. It is caused by their jumping down from high places upon the hard floor, or by walking over ground that has many sharp stones or ash screenings on it. When first noticed, if not too far advanced, apply lunar caustic; pigment of iodine applied daily will also be beneficial. If the foot is swollen and contains matter, it should be opened and the pus pressed out, after which it should be well washed with warm water, and in a day or so apply the caustic. The fowl should, of course, be kept in confinement in a small coop and upon clean straw.

CRAMPS.

Young and especially early chickens are more frequently afflicted with this disease than old birds. The symptoms are a moping or walking around on the knuckles or outside of the foot, contraction of the toes and squatting on the hocks. Prevention is a dry and warm run free from dampness, cold, etc.

If the chicks are badly affected and removal to a dry and warm house does not effect a cure, then bathe the feet with warm water and give some stimulants such as a quarter grain of opium. Meat given daily, and cayenne pepper mixed with the food. Cramps in adult fowls is indicated by weakness of legs, stiffness of the joints and con-

traction of the muscles. The treatment should be the same as for young chickens except the dose should be twice as strong.

DIARRHŒA.

Is usually caused by too sudden change of food or weather. If discovered in its earliest stages it may be easily cured or checked by feeding soft food cooked with milk and a very little powdered chalk.

But in case the disease has become advanced the fowl should be removed to a dry warm place and given but a very little food which should be warm and soft, to which should be added a tea-spoonful of kerosene oil to a quart of food. With a little care the fowl can be cured in a few days so as to be let loose with the others, when, if left to itself, it would mope around for a week or two and then either die or in its weakened condition be a fit subject for other diseases.

CHOLERA.

In a large number of cases where chickens become sick and suddenly die it is laid to the chicken cholera, while in reality fully three-fourths of them die from other diseases, such as roup, egg-bound, diarrhœa, etc. But be that as it may it takes but a short time for the chicken cholera to play sad havoc with a flock of chickens. It is contagious, hence the importance of removing the fowl as soon as noticed, away from its mates. The symptoms of this disease is sudden and violent thirst and diarrhœa. The droppings of a greenish, then thin and white color. The fowl becomes very weak and staggers about.

The cause is exposure to the hot sun without proper shade, filthy drinking water and especially such as is found around a pig pen, and a lack of proper food, such as meat and green stuff. There are also some scientists who claim it is caused by a certain parasite or insect.

The treatment for this disease must be immediate. The following remedy has been tried with good success: Take equal parts of tincture of opium, red pepper, rhubarb, pepperment and camphor, mixed well and shaken before using. Give the fowl as soon as noticed about ten drops of the above, and in about eight to ten hours, if the bird does not seem better, give another dose and so on until benefited. If

the disease is not too far advanced one dose will cure. Should not the above remedy be at hand, give the fowl one-half a tea-spoonful of common coal oil every six hours. This is a severe dose, but it has been known to work an immediate cure.

CROP BOUND.

At this season of the year, as the warm weather comes on, fowls that have been confined to close quarters are liable, when they get access to the farm or where there is long hay or grass, to be troubled with what is called crop bound. The symptoms are a hard or distended crop, together with a lack of energy in the fowl and a lifting of the crop as if to raise it up by the bird extending its breast and neck with sudden jerks. It is caused by feeding too much hard grain, or by a piece of gristly meat getting in the passage from the crop to the body. It is also very common to find a long piece of hay so twisted up and knotted as to stop up the passage. A fowl thus affected should be placed by itself where it will be quiet and can have plenty of water. It should also have a teaspoonful of sweet oil, after which the crop should be worked or kneaded until it becomes soft. If this does not effect a cure, the crop must be opened. This can be easily done by making a small incision at the top of the crop, after which the contents of the crop should be emptied and thoroughly washed out, the passage from the crop should also be examined to see if open, after which three or four stitches should be made first in the inner skin and then in the outer, using care not to stitch the inner and outer skins together. The fowl should then be kept without food or water for twenty-four hours, when a very little soft food can be given, and no water for at least three days, and but very little food for at least a week.

ROUP.

Roup in its first stages can be easily cured, but when advanced it becomes contagious and it often occurs that by not taking a fowl effected by it away from its mates a whole flock is lost. The symptoms of roup is a desire of the fowl to remain on the roost, or to mope around in some corner. Their throat seems to be swollen and a rat-

tling or wheezing sound is often heard. Froth appears in the under corner of the eye accompanied by a thin discharge from the nostrils, and if not attended to at once the eye lids swell and the eye fills with yellowish matter.

The nostrils become closed from increased discharge and the fowls soon become blind and starve to death.

They should be removed at once to some good warm place away from their mates, and their eyes and nostrils should be washed and bathed at least three times a day with warm salt and water or alum and water.

GAPES.

The Poultry Bulletin says that it has rather discredited the idea of any cure for gapes in chickens, but now confesses, after examination, that it has reason for faith in camphor. The camphor acts upon the worms by vapor, the same as in inhalation of carbolic acid fumes, and being a very strong vermifuge, it kills the worms. It is usual to give the remedy in pills about the size of an ordinary pea, and also diluted in the water they drink. The chick will smell of the camphor for a long time after taking it, and the fumes cannot fail to penetrate the windpipe and lungs. They can also be removed by use of a looped horse-hair, or the tip end of a feather, but it is a delicate operation and ordinary persons cannot do it.

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